

ANNEXURE TO INDENT NO: SHAR/VAST/2018008923

**REQUEST FOR PROPOSAL (RFP)**

**FOR**

**PROCUREMENT, MANUFACTURE, SUPPLY,  
TRANSPORTATION, INSPECTION, ERECTION, TESTING AND  
COMMISSIONING OF  
MOBILE LAUNCH PEDESTALS FOR PIF PROJECT**

**SPECIFICATIONS & PRICE SCHEDULE**

OWNER : INDIAN SPACE RESEARCH ORGANISATION  
PROJECT : PSLV INTEGRATION FACILITIES  
LOCATION : SDSC, SHAR, SRIHARIKOTA



**PSLV INTEGRATION FACILITIES (PIF)  
SATISH DHAWAN SPACE CENTRE  
SRIHARIKOTA -524124.  
INDIAN SPACE RESEARCH ORGANISATION**

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**PSLV INTEGRATION FACILITIES (PIF)**

SECTION: A

**MOBILE LAUNCH PEDESTALS (MLPs)**

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REQUEST FOR PROPOSAL FOR MOBILE LAUNCH PEDESTALS SPECIFICATIONS & ANNEXURES			
SEC TION	SPECIFICATION NO: PIF-MLP-001/2018	ISSUE NO.	TITLE: REQUEST FOR PROPOSAL FOR MOBILE LAUNCH PEDESTALS
<b>SPECIFICATIONS</b>			
A	PIF/MLP/SPEC	R0	GENERAL SPECIFICATION
B	PIF/ MLP /SPEC	R0	TECHNICAL SPECIFICATION
C	PIF/MLP/SPEC	R0	WELDING SPECIFICATION
D	PIF/ MLP /SPEC	R0	PAINTING SPECIFICATION
E1	PIF/ MLP /SPEC	R0	QUALITY ASSURANCE PLAN
E2	PIF/ MLP /SPEC	R0	BILL OF QUANTITIES
E3	PIF/MLP/SPEC	R0	DRAWINGS
<b>ANNEXURES</b>			
F1	PIF/ MLP /SPEC	R0	SCHEDULE OF PRICES
F2	PIF/ MLP /SPEC	R0	PREQUALIFICATION CRITERIA
F3	PIF/ MLP /SPEC	R0	SCHEDULE OF GENERAL PARTICULARS / VENDOR EVALUATION FORMAT
F4	PIF/ MLP /SPEC	R0	CONFIRMATION OF ACHIEVING ACCURACY
F5	PIF/ MLP /SPEC	R0	SCHEDULE OF DEVIATIONS FROM SPECIFICATIONS
F6	PIF/ MLP /SPEC	R0	SCHEDULE OF TIME FOR MANUFACTURE, DESPATCH AND SHIPMENT TO SITE
F7	PIF/ MLP /SPEC	R0	SCHEDULE OF BIDDERS EXPERIENCE & DETAILS OF PRESENT WORKS BEING EXECUTED.
F8	PIF/ MLP /SPEC	R0	DATA TO BE FILLED ALONG WITH BID FOR SUPPLY & COMMISSIONING OF MLP
F9	PIF/ MLP /SPEC	R0	CHECK LIST
F10	PIF/ MLP /SPEC	R0	SCHEDULE OF APPROVED MAKES

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<div style="text-align: center;"> <h1>SECTION –A</h1> <h2>GENERAL TERMS AND CONDITIONS OF THE CONTRACT</h2> </div>		
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<p style="text-align: center;"><b><u>PROPOSAL DOCUMENT, CLARIFICATION AND ADDENDUM</u></b></p> <p>Quotations are invited from the interested bidders for the enclosed scope of work in two-part bid. Part-1 technical &amp; unpriced part of the work and Part-2 Priced commercial part.</p> <p><b><i>Only experienced Bidders who are qualifying in prebid qualification criteria given in Section F2 only should quote.</i></b></p> <p>The RFP document is organized in eight sections as follows.</p> <p>Section –A General Specification, Terms and Conditions of the Contract</p> <p>Section –B Scope of Work &amp; Technical Specifications</p> <p>Section –C Welding specifications</p> <p>Section –D Painting specifications</p> <p>Section- E1 Quality assurance plan</p> <p>Section –E2 Bill of Quantities</p> <p>Section –E3 Drawings</p> <p>Section-F Annexures.</p> <p><b>Title of the proposal: “PROCUREMENT, MANUFACTURE, SUPPLY, TRANSPORTATION, INSPECTION, ERECTION, TESTING AND COMMISSIONING OF MOBILE LAUNCH PEDESTALS FOR PIF PROJECT”.</b></p> <p><b>Date Public Notification issued by ISRO: <a href="#">as per the notification</a></b></p> <p><b>Last Date of downloading tender Document by tenderer: <a href="#">as per the notification</a></b></p> <p><b>Last date of submission of tender documents in online by tenderer: <a href="#">as per the notification</a></b></p> <p><b>Last date of Bid sealing in online by ISRO: <a href="#">as per the notification</a></b></p> <p><b>Last date for giving open authorization in online by tenderer: <a href="#">as per the notification</a></b></p> <p><b>A. PROPOSAL DOCUMENT</b></p> <p>1. Successful Bidder shall sign &amp; stamp each page of the tender document (RFP) as token of his acceptance and submit the same.</p>		
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<p>2. Proposal documents shall remain the property of SDSC SHAR and shall not be used for any another purpose without the consent of SDSC SHAR.</p> <p>3. The proposal shall be completely filled in all respects and Bid shall be tendered together with requisite information &amp; Annexure. Any offer incomplete in any particulars is liable to be rejected.</p> <p>4. The Proposal (Unpriced Techno-commercial bid) with a complete set of the required documents shall be up-loaded in ISRO e-procurement website.</p> <p>5. The Proposals shall be submitted on-line in ISRO e-procurement portal before the time limit for bid submission specified in the Letter Inviting Bid.</p> <p>6. Supplier shall submit the open authorization on line within the time limit Specified in the Letter Inviting bid.</p> <p>7. The Proposal will be opened on the date and on the time specified in the Letter Inviting Bid or as soon thereafter as convenient. Proposal not received in time will not be considered.</p> <p>8. Bidders shall set their quotations in firm figures and without variations/additions in the terms of the Proposal documents. In case of ambiguity between the numbers and letters, letters only will be considered for bid evaluation.</p> <p><b>9. AMBIGUITY</b></p> <p>Should there be any ambiguity or doubt as to the meaning of any of the tender clause/condition or if any further information is required, the matter shall be immediately brought to the notice of Head, Purchase &amp; Stores of SDSC SHAR in writing.</p> <p><b>B. PREPARATION OF BIDS</b></p> <p><b>1. SITE VISIT</b></p> <p>Bidder is advised to visit &amp; examine the site and its surrounding to familiarize himself of the existing facilities &amp; environment and shall collect all other information which may be required for preparing &amp; submitting the Bid and entering into the contract. Claims and objections due to ignorance of existing conditions or inadequacy of information will not be considered after submission of the Bid and during implementation.</p>		
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<p><b>2. VALIDITY OF OFFER</b></p> <p>Bid shall remain valid for acceptance for a minimum period <b>of 4 (four) months</b> from the due date of submission of the Bid. The Bidder shall not be entitled during the said period to revoke or revise his Bid or to vary the Bid except and to the extent required by SDSC SHAR in writing. Bid shall be revalidated for extended period as required by SDSC SHAR in writing. In such cases, unless otherwise specified, it is understood that validity is sought and provided without varying either the quoted price or any other terms &amp; conditions of Bid finalized till that time.</p> <p><b>3. COST OF BIDDING</b></p> <p>All direct and indirect costs associated with the preparation and submission of bid shall be to Bidder's account and SDSC SHAR will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bid process.</p> <p><b>4. APPLICABLE LANGUAGE/ MEASUREMENTS</b></p> <p>The bid and all correspondence incidental to and concerning the bid shall be in the English Language. For supporting document and printing literature submitted in any other language, an accurate English Translation shall also be submitted. Responsibility for correctness in translation shall lie with the Bidder. All the measurements shall be given in metric system.</p> <p><b>5. ARRANGEMENT OF BID</b></p> <p>The Bid shall be neatly presented on white paper with consecutively numbered pages. It should not contain any terms and conditions which are not applicable to the Bid. The Bid and all details submitted by the Bidder shall be signed and stamped on each page as token of acceptance, by a person legally authorized to enter into agreement on behalf of the Bidder. (Corrections / alteration, if any, shall also be signed by the same person).</p> <p><b>6. SCHEDULE OF PRICES</b></p> <p>The schedule of prices shall be read in conjunction with all the sections of proposal document. The price must be filled online in the same format of 'Schedule of Prices' in Section F1. Hard copy of Price bid shall not be sent strictly. If hard copy of price bid is received the bid will be summarily rejected.</p>		
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<p>Price bid shall be filled in Price Bid form in e-procurement only. Price Bid annexures to be submitted in Price Bid supporting documents only and in e-procurement only.</p> <p>Price bid shall not be enclosed along with Technical &amp; Unpriced Commercial Bid in e-procurement/ hard copy.</p> <p><b>7. DOCUMENTS COMPRISING THE BID</b></p> <p>Bids shall be arranged in the following order.</p> <p><b>A. <u>Part – I: Technical and Unpriced Commercial Part</u></b></p> <p>Technical and unpriced commercial part shall comprise the attachments, Specifying attachment number arranged in the order as follows:</p> <p>(a) Submission of bid letter.</p> <p>(b) Demand draft of <b>Rs: 5 lakh</b> as Earnest Money Deposit (EMD)</p> <p>(c) Power of attorney in favour of authorized signatory of the bid / proposal documents.</p> <p>(d) All the Section-A, B, C, D, E1 and E2 with all the annexure in Section-F1 to F10 enclosed in proposal duly filled, signed and stamped.</p> <p>(e) Bid qualification criteria for supply of MOBILE LAUNCH PEDESTALS and all supporting documents.</p> <p>(f) Write-up on the detailed procedure to be followed for erection and handling equipment including mobile cranes proposed to be used for erection of mobile launch pedestals. All the material handling equipment are in the scope of contractor.</p> <p>(g) Fabrication shop layout where fabrication of MLP is planned.</p> <p>(h) Details of shop floor equipment like Furnace for stress relieving of plates, fabricated modules, welding equipment, edge preparation equipment.</p> <p>(i) Details of machines for machining the surfaces of rings, plates etc.</p> <p>(j) <b>Unpriced copy of</b> schedule of prices with all other commercial terms, taxes, duties, exemption certificates and conditions duly filled (<b>Prices to be kept blank</b>), signed and stamped.</p> <p>(k) Audited balance sheet including profit and loss account for financial years 2014-15, 2015-16, 2016-17 showing annual turn over</p> <p>(l) Copy of the Income Tax returns filed for financial years 2014-15, 2015-16 &amp; 2016-17</p>		
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<p>(m) Latest solvency certificate from a scheduled bank for a value not less than Rs.430 Lakhs or above.</p> <p>(n) Description of the procedures adapted for material procurement, fabrication with deviations from technical specification and proposed design modifications.</p> <p>(o) Data sheets for all the equipment &amp; checklists enclosed in proposal duly filled, signed &amp; stamped.</p> <p>(p) Technical literature &amp; data sheets of equipment / machinery used by him and any other document as mentioned in the proposal.</p> <p>(q) Project execution plan</p> <p>(r) Bar chart for supply &amp; erection schedule indicating the date of completion of various activities so as to complete the execution of the contract within the time frame stipulated in the tender specification. The bar chart shall be prepared considering the 3 no's of launch pedestals together.</p> <p>(s) Any other relevant document, bidder desires to submit.</p> <p>(t) List of items which require Customs duty exemption certificate (CDEC) from SDSC-SHAR.</p> <p><b>B. <u>Part – II: Priced Commercial Bid</u></b></p> <p>Priced commercial bid shall be filled on line in the price bid format in e-procurement. Schedule of prices/ Annexures also to be filled and uploaded in price bid supporting documents in e-procurement portal only.</p> <p>No deviations, terms and conditions, assumptions, conditions, discounts etc. shall be stipulated in price bid. Department will not take cognizance of any such statement and may at their discretion reject such bids.</p> <p><b>C. <u>BID SUBMISSION</u></b></p> <p>Bids duly filled in by the Bidder should invariably be submitted as stipulated in the Letter inviting bid. Bids shall be submitted in the following manner.</p> <p><b>I. PART – I: UN PRICED TECHNO-COMMERCIAL PART OF THE BID FOR THE WORK</b></p> <p>Complete Techno-commercial part of the bid shall be filled online in the “vendor Specified Terms’ form of the e-tender. Any documents related (demand draft for tender fee &amp; EMD), technical literature, guarantee /</p>		
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warranty certificates and any other relevant documents as per the tender shall be scanned in lower resolution format and uploaded to the e-tender under 'Documents solicited from Vendor' form only in ISRO e-procurement portal (<https://eprocure.isro.gov.in>). In case if the space for uploading is not sufficient, hard copy of the balance documents shall be submitted before due date.

Envelope of technical bid shall be marked with following:

PART-I TECHNO-COMMERCIAL BID	
Name of client :	Satish Dhawan Space Centre SHAR Indian Space Research Organisation
Title of the proposal :	"PROCUREMENT, , MANUFACTURE, SUPPLY, TRANSPORTATION, INSPECTION, ERECTION, TESTING AND COMMISSIONING OF MOBILE LAUNCH PEDESTALS FOR PIF PROJECT"
Tender Ref no:	
Due date and time of the opening :	DD/MM/YY
From (Name of the bidder with address) :	
To:	Head, Purchase & Stores Satish Dhawan Space Centre SHAR ISRO, Dept. of Space Govt. of India Sriharikota – 524124, SPSR Nellore Dist, Andhra Pradesh, India

The deviation statement if any, and checklist shall be filled online, without which the bid will not be considered.

**II. PART – II : PRICE PART OF THE BID FOR THE WORK**

Price bid shall be filled in the on-line 'price bid' form of the e-tender only in ISRO eProcurement website <https://eprocure.isro.gov.in>. The cost of spares and other prices shall be filled in the respective forms available on-line in the

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eportal. Any other terms and conditions given in this part shall not be considered and if insisted upon by the Bidder, bids are liable for rejection.

- SDSC SHAR may open Part – I of the bid on the due date of opening subject to meeting the minimum evaluation criteria. Price Bids (Part-II) of technically and commercially acceptable offers shall be opened at a later date.
- SDSC SHAR reserves the right to reject any or all the Bids without assigning any reasons thereof.
- Any bids/offers with price details in Techno-Commercial Offer (Part – I) shall be rejected.**
  - SDSC SHAR reserve rights to place order for either full quantities of all items or partial quantities and partial items based on the unit rates available.

**D. Vendor Evaluation Format**

SDSC SHAR seeks response to the given questionnaire for assimilating data which would be used for evaluating the capability of the supplier for executing the referred work. Hence, the supplier is requested to provide only genuine data and any discrepancy found at a later point of time may result in rejection of the supplier from purchase process. Furnishing of data cannot be construed as automatic qualification for participation in the tender. Questionnaire should be signed by a responsible and authorized person of the Company / Agency.

Schedule of general particulars / vendor evaluation format shall be filled as per **Section: F3**.

Schedule of Bidders experience and details of present works being executed are to be filled as per **Section: F7**.

**Note:** In order to consider as valid experience, all the experience has to be supported with the technical details, completion certificate and purchase order.

**E. DETERMINATION OF RESPONSIVENESS**

SDSC SHAR will scrutinize tenders to determine whether the tender is substantially responsive to the requirements of the tender documents. For the

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<p>purpose of this clause, a substantially responsive tender is one which inter-alia conforms to all the terms and conditions of the entire Tender document without any deviations and reservations. The decision of SDSC SHAR shall be final in this regard.</p> <p><b>F. <u>EARNEST MONEY DEPOSIT (EMD)</u></b></p> <p>The tenderer has to submit an Earnest Money Deposit (EMD) for <b>Rs. 5.00 Lakhs</b> in a single installment through Demand Draft (DD)/ Banker's Cheque/ Fixed Deposit Receipts or Bank Guarantee from any of the Scheduled Banks executed on non-judicial stamp paper of appropriate value. In case of Bank Guarantee, it shall be valid for a period of 45 days beyond the final tender validity date. It shall be taken in-favour of "Sr. Accounts Officer, SDSC SHAR" payable at State Bank of India, Sriharikota Branch. The bid will be disqualified if the EMD is not submitted along with the Techno-commercial Bid.</p> <p>Foreign vendors, Registered vendors or vendors who have applied for renewal of registration, Central PSUs/ PSEs/ Autonomous Bodies, Micro and Small Enterprises, KVIC, National Small Industries Corporation, etc. shall be exempt from the payment of EMD. Vendors seeking exemption from payment of EMD shall submit the necessary documentary proof.</p> <p>EMD of a vendor shall be forfeited, if the tenderer/Contractor withdraws or amends his tender or deviates from the tender in any respect within the period of validity of the tender. Failure to furnish Security Deposit/ Performance Bond by a successful vendor within the specified period shall also result in forfeiture of EMD.</p> <p>EMD shall be refunded to all the Unsuccessful vendors within 30 days after placement of the Purchase Order. EMD shall be refunded to the successful Tenderer/Contractor after payment of Security Deposit (SD) or may be adjusted against the Security Deposit (SD). EMD shall be refunded to all the participants in cases where the Tender is cancelled or withdrawn by the Centre/ Unit, within 30 days from the date of such cancellation or withdrawal.</p> <p><b>G. <u>BID EVALUATION</u></b></p>		
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<p>I. During evaluation, SDSC SHAR may request Bidder for any clarification on the bid OR additional documents.</p> <p>II. Techno-commercial discussion shall be arranged with Bidder, if needed. Bidder shall depute his authorised representatives for attending discussions. The representatives attending the discussions shall produce authorisation from his organisation to attend the discussion and sign minutes of meeting on behalf of his organisation if required. The authorised representative must be competent and empowered to settle/decide on all technical and commercial issues.</p> <p>III. Bidder must provide the point by point compliance to the technical specifications along with deviations as per "Schedule of deviations" attached in section F5. The tender will be rejected, if the deviations are not acceptable to the Department.</p> <p>IV. Performance of Bidder in similar nature of works executed/ under execution shall be taken into consideration before selecting the Bidder for opening his price bid.</p> <p>V. The time schedule for completion is given in the Proposal document. Bidder is required to confirm the completion period unconditionally.</p> <p>VI. If necessary, to arrive at evaluated prices, wherever applicable, loading on total quoted prices shall be done.</p> <p>VII. SDSC SHAR reserves the right to accept a bid other than a lowest and to accept or reject any bid in full or part without assigning any reasons. Such decisions by SDSC SHAR shall bear no liability whatsoever consequent upon such decision.</p> <p>VIII. SDSC SHAR reserves the right to split the order or alter the quantities specified based on prices quoted for part work or unit rate quoted by BIDDER.</p> <p>IX. The Bidder, whose bid is accepted by SDSC SHAR, shall be issued a Letter of Intent (LOI) /Purchase Order (PO) to proceed with the work. Successful Bidder shall confirm acceptance by returning a signed copy of the LOI/PO.</p>		
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<div style="text-align: center;"> <h2>SECTION-A</h2> <h3>GENERAL SPECIFICATION</h3> </div>		
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<p><b>1. INTRODUCTION</b></p> <p>SDSC SHAR invites tenders in sealed covers from reputed firms with proven ability to <b><i>“PROCUREMENT, MANUFACTURE, SUPPLY, TRANSPORTATION, INSPECTION, ERECTION, TESTING AND COMMISSIONING OF MOBILE LAUNCH PEDESTALS FOR PIF PROJECT”</i></b> as per the specifications</p> <p><b>2. SCOPE OF WORK AND TECHNICAL SPECIFICATIONS</b></p> <p>The detailed scope of work and technical specifications are given in Sections B, C D, E1, E2 &amp;E3 of RFP document. The general terms and conditions are given below.</p> <p><b>3. SUPPLIER's OBLIGATIONS &amp; FUNCTIONS</b></p> <p><b>3.1.SPECIFICATIONS AND DRAWINGS</b></p> <p>The Supplier shall execute the works in compliance with the provisions of CONTRACT, good engineering practices and codes requirements.</p> <p><b>3.2.SUBMISSION OF TECHNICAL DOCUMENTS</b></p> <p>Supplier shall prepare and submit to SDSC SHAR for approval of following documents and drawings:</p> <ul style="list-style-type: none"> <li>3.2.1. Technical literatures &amp; data sheets of equipment used by him.</li> <li>3.2.2. Fabrication shop layout for fabricating of MLP.</li> <li>3.2.3. Details of heat treatment / stress relieving equipment</li> <li>3.2.4. Details of Turning machines / milling machines to be used for machining.</li> <li>3.2.5. Assembly Shop layout drawings suitable for control assembly of MLP.</li> <li>3.2.6. Erection sequence schedule along with erection drawings.</li> <li>3.2.7. Detailed Quality Assurance Plan</li> <li>3.2.8. No activity shall be executed unless SDSC SHAR's approval is obtained.</li> </ul> <p>The above documents shall be submitted in a format approved by SDSC SHAR.</p> <p><b>3.3.PROCUREMENT FABRICATION &amp; SUPPLY</b></p> <p>Supplier shall carry out detailed shop floor fabrication drawings based on department provided fabrication drawings and supply of the MOBILE LAUNCH PEDESTALS in accordance with the scope, technical specifications and terms &amp; conditions of contract.</p>		
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<p><b>3.4.DELIVERY AND STORAGE</b></p> <p>3.4.1. Dispatch Instructions given in the Contract shall be strictly followed. Failure to comply with the instructions may result in delay in payment apart from imposing any other charges as may be deemed to fit.</p> <p>3.4.2. The Supplier shall be responsible for transporting all the material, equipment to site, unloading and storage.</p> <p>3.4.3. No equipment shall be delivered without obtaining dispatch clearance from SDSC SHAR.</p> <p>3.4.4. All the equipment shall be properly packed to avoid any damage during transportation / handling / storage and any damages found has to be replaced at free of cost by supplier.</p> <p>3.4.5. The equipment and material received at site shall be stored at a place assigned for this purpose.</p> <p>3.4.6. Supplier shall take proper care while storing the equipment and shall provide watch &amp; ward at his own cost.</p> <p><b>4. INSTALLATION</b></p> <p><b>4.1.GENERAL</b></p> <p>4.1.1. Supplier's staff shall include adequate number of competent erection engineers with proven experience on similar works to supervise the erection works and sufficient skilled, unskilled and semiskilled labour to ensure completion of work in time.</p> <p>4.1.2. Supplier's erection staff shall arrive at site on date agreed by SDSC SHAR. Prior to proceeding to work, Supplier shall however, first ensure that required/sufficient part of his supply has arrived at site.</p> <p>4.1.3. Erection of equipment may be phased in such a manner so as not to obstruct the work being done by other Suppliers and / or operating staff who may be present at that time.</p> <p>4.1.4. During erection, Department's quality team / their engineer will visit site From time to time with or without Supplier's engineer to establish conformity of the work with specification. Any deviations, deficiencies or evidence of unsatisfactory workmanship shall be corrected as instructed by Department. All the material handling equipment shall be in the scope of vendor only.</p>		
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<p>4.1.5. Supplier shall carry out work in a true professional manner and strictly Adhere to the approved drawings. Any damage caused by Supplier during erection to new or existing building / environment shall be made good at no extra cost to Department.</p> <p><b>4.2.RECORDS</b></p> <p>Supplier shall maintain records pertaining to the quality of erection work in a format approved by Department. Whenever erection work is complete, Supplier shall offer erected equipment for inspection to Department's engineer who along with Supplier's engineer will sign such records on acceptance.</p> <p><b>4.3.MLP ERECTION</b></p> <p>4.3.1. Supplier shall carry out the works in accordance with the specific Instructions given on the approved drawings, method statements, manufacturer's drawings / documents or as directed by Department. MLP shall be erected in neat manner so that they are level, plumb, and square and properly aligned and oriented. Tolerances shall be as established in manufactures fabrication drawings or as stipulated by Department. No equipment shall be welded or bolted, until its alignment is checked and found acceptable by Department.</p> <p>4.3.2. Supplier shall provide all supervision, labour, tools for erection, testing and inspection, machines, cranes, equipment, scaffolding, rigging material and incidental material such as bolts, wedges, anchors, etc. required to complete the works. Supplier shall also provide at his own cost all such consumables like oxygen – acetylene gas, welding rods, grinding wheels, temporary supports, shims etc. required to complete work.</p> <p>4.3.3. Supplier shall take utmost care while handling instruments, delicate equipment, panels etc. and protect all such equipment on erection.</p> <p><b>4.4.SAFETY</b></p> <p>Supplier shall follow the safety regulations / codes and shall take necessary measures at his own cost.</p> <p><b>4.5.ERECTION &amp; CONSTRUCTION POWER</b></p> <p>4.5.1. Electrical power may be extended by SDSC SHAR on chargeable, as per the tariff rules of State Electricity Board and SDSC SHAR. Reasonable quality of normal Construction power will be made available at one point which is 100m away from the work site (415V, 3</p>		
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<p>phase, 50 Hz). However onward distribution shall be by the supplier. Installation of necessary power cables of 100m or more, energy meters, switchgear &amp; distribution system, etc. for Construction power in a safe manner in strict conformity with local rules &amp; regulations will be responsibility of supplier.</p> <p>4.5.2. During non-availability of power, supplier shall make his own arrangement of alternate power source at their cost.</p> <p><b>4.6. WORK RULES AT SDSC-SHAR</b></p> <p>The work shall be carried out on SDSC-SHAR working days only or permission to be obtained from the contract manager for late hours / holidays.</p> <p><b>4.7. SITE PREPARATION / CLEARANCE</b></p> <p>4.7.1. No site preparation works are planned by SDSC SHAR for site fabrication works. Only environmental clearance will be provided for site preparation works. Preparation of required site for fabrication and approach requirements for handling the MLP shall be in scope of contractor. The site identified in such works shall be within 400 meter from PIF building location.</p> <p>4.7.2. Upon completion of work, supplier shall remove all his equipment and material from the site within one month or time mutually agreed. Supplier at all times shall keep site in clean condition and remove all unwanted material at regular intervals. In case supplier fails to remove all their equipment and material within the mutually agreed time, it is deemed that SDSC SHAR will arrange to remove the same at Supplier's cost.</p> <p><b>5. ACCOMMODATION</b></p> <p>5.1.1. Accommodation will not be provided by SDSC SHAR to Contractors.</p> <p>5.1.2. Supplier shall make their own arrangement for accommodation, transportation &amp; canteen facility for all his staff, technicians, labour &amp; workers.</p> <p><b>6. MEDICAL FACILITIES</b></p> <p>No medical facilities will be provided by SDSC SHAR. Supplier shall make their own arrangement at their own expenses for medical facilities for site personnel.</p>		
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<p><b>7. WORK PROGRAMME</b></p> <p>Supplier shall prepare a detailed programme schedule for review / approval by SDSC SHAR. Supplier as per exigencies of work shall revise and update programme periodically.</p> <p><b>7.1. SUB-CONTRACTS</b></p> <p>7.1.1. No work shall be sub-contracted without prior approval of SDSC SHAR.</p> <p>7.1.2. Supplier shall be responsible for the proper execution of any sub-contract placed by him in connection with this purchase order.</p> <p>7.1.3. Supplier shall furnish to SDSC SHAR the copies of all un-priced sub-orders showing promised delivery dates and places.</p> <p><b>8. CHANGES AND MODIFICATION TO SPECIFICATIONS, DRAWINGS AND QUALITATIVE / QUANTITATIVE REQUIREMENTS</b></p> <p>8.1.1. Supplier shall obtain approval from SDSC SHAR before initiating the action for procurement of bought out items.</p> <p>8.1.2. During the fabrication review, supplier has to carry out the mutually agreed modifications to meet the overall requirement.</p> <p><b>9. RECORD OF DRAWINGS AND O&amp;M MANUALS</b></p> <p>9.1. Supplier shall submit 3 hard copies &amp; one soft copy of all the approved drawings incorporating any modification / changes made during the execution of CONTRACT. All these drawings shall be marked as 'As Built'.</p> <p>9.2. Submission of the drawings shall be a precondition for releasing of any final payment due to Supplier.</p> <p><b>10. TAXES AND DUTIES</b></p> <p>10.1. As per Notification No. 47/2017-Integrated Tax (Rate) Dt: 14.11.2017 issued by Ministry of Finance (Dept. of Revenue), SDSC SHAR is eligible to avail a reduced rate of IGST@5% for the procurements made by the Dept. of Space (DOS) being a Public Funded Research Institution. We will provide IGST Exemption Certificate. However for supply of services the bidders have consider the applicable GST rates.</p> <p>10.2. CGST/SGST/UTGST/IGST (whichever is applicable) shall not be included in the lump sum quote, but indicated (both percentage of tax applicable &amp; amount on which it is applicable) separately in schedule of prices.</p> <p>10.3. It is the responsibility of the contractor to issue the Tax Invoice strictly as per the format prescribed under the relevant applicable GST law (CGST</p>		
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<p>Act/SGST Act/UTGST Act/IGST Act). Contractor to indicate the proper GSTN Registration/ HSN code in their tax invoices.</p> <p>10.4. CGST/SGST/UTGST/IGST shall be paid at actuals against Tax Invoice but restricted to the amount and percentage in the contract.</p> <p>10.5. GST details are given below</p> <p>10.6. GSTIN: 37AAAGS1366J1Z1</p> <p>10.7. LEGAL NAME: SATISH DHAWAN SPACE CENTRE SHAR</p> <p>10.8. VALIDITY FROM:29/08/2017</p> <p>10.9. TYPE OF REGISTRATION: REGULAR</p> <p><b>11. STATUTORY VARIATION</b></p> <p>Statutory variation for CGST/SGST/UGST/IGST is applicable, provided the actual completion of services does not occur beyond the period stipulated in the order/contract or any extension (without levy of penalty). For variation after the agreed completion periods, the service provider alone shall bear the impact for the upwards revisions.</p> <p>For downward revisions, the Department shall be given the benefit of reduction in CGST/SGST/UGST/IGST.</p> <p><b>12. CUSTOMS DUTY</b></p> <p>12.1. As per Notification No. 05/2018 CUSTOMS Dt. 25.01.2018 ISRO is eligible to pay reduced rate of Customs duty at 5% + Surcharge (10 % on CD) + 5% IGST ( on total value viz. basic cost + CD + Surcharge) (We will provide Customs Duty Exemption Certificate in case of Import Orders/ imported supplies/ High Sea Sales). This may be taken into account while considering the cost of import items, if any.</p> <p>12.2. Customs clearance and other formalities at the destined port within the country shall be handled by the Supplier at his own cost. Further the transportation from the port to the work of Supplier or site shall be arranged by Supplier at his own cost.</p> <p><b>13. RISK COVERAGE</b></p> <p>The Supplier shall arrange comprehensive risk coverage at his own cost covering the value of item including transportation to the site from manufacturer's works, storage at site, erection, testing and commissioning at site. The period of such coverage shall be up to contractual completion period or any extension granted by Department thereof.</p>		
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<p><b>14. INCOME TAX</b></p> <p>Income tax at the prevailing rate as applicable from time to time shall be deducted from the supplier's bills as per Income Tax Act, 1961 and the rules there-under or any re-enactment or modifications thereof and a TDS certificate shall be issued.</p> <p><b>15. SECURITY DEPOSIT</b></p> <p>15.1. The supplier, whose tender is accepted, will be required to furnish by way of security deposit for the due fulfilment of the contract such a sum as will amount to 10 % of the contract price of the work awarded.</p> <p>15.2. The security deposit (bearing no interest) shall be held by the Department as security till satisfactory completion, testing and handing over of all the system and for the due performance of all suppliers' obligations under the contract as per delivery period or extension granted thereof by the Department.</p> <p>15.3. The supplier within 10 days of Purchase Order or signing of Contract, deposit with the Accounts officer, Satish Dhawan Space Centre SHAR, Sriharikota as detailed above by any one or more of the following modes namely</p> <p>I. By a crossed demand draft in favour of Accounts officer, Satish Dhawan Space Centre SHAR drawn on SBI and payable at Sriharikota.</p> <p>II. By a bank guarantee in the prescribed format (required format will be provided after award of contract). The bank guarantee shall be from a nationalized bank &amp; shall be valid for 60 days beyond completion period.</p> <p>15.4. In case of breach of contract, the Performance Security shall stand forfeited in addition to other relief available to the Department under this contract.</p> <p><b>16. PACKING AND FORWARDING</b></p> <p>16.1. The Supplier shall arrange to have all the material suitably packed as per the standards and as specified in the contract. Unless otherwise provided for in the contract, all containers (including packing cases, boxes, tins, drums, and wrappings) used by the Supplier shall be non-returnable.</p> <p>16.2. All packing and transport charges, transit handling costs, transit risk coverage and transport fees of agents employed at the place of delivery or elsewhere, shall be deemed included in the price to be paid to the Supplier.</p> <p><b>17. ARBITRATION</b></p>		
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<p>In the event of any question, dispute of difference arising under these conditions or any conditions contained in the Purchase Order or in connection with this contract, (except as to any matters the decision of which is specially provided for by these conditions) the same shall be referred to the sole arbitration of the head of the Purchase Office or some other person appointed by him, it will be no objection that the arbitrator is a Government Servant that he had to deal with matter to which the contract relates or that in the course of his duties as Government Servant he had expressed views on all or any of the matters in disputes or difference. The award of the arbitrator shall be final and binding on the parties of this contract.</p> <p>It is Term of this contract:</p> <p>a. If the arbitrator be the head of the purchase office.</p> <p>I. In the event of his being transferred or vacating his office by resignation or otherwise, it shall be lawful for his successor-in-office either to proceed with the reference himself, or to appoint another person as arbitrator, or.</p> <p>II. In the event of his being unwilling or unable to act for any reason, it shall be lawful for the Head of the Purchase Office to appoint another person as arbitrator: or</p> <p>b. If the arbitrator be a person appointed by the Head of the Purchase Office in the event of his dying, neglecting or refusing to act, or resigning or being unable to act, for any reason, it shall be lawful for the Head of the Purchase Office either to proceed with the reference himself or to appoint another person as arbitrator in place of the outgoing arbitrator. Subject as aforesaid, the Indian Arbitration and Conciliation Act, 1996 and the rules there under and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceedings under this Clause. The arbitrator shall have the power to the extent with the consent of the Purchaser and the Contractor the time making and publishing the award. The venue of arbitration shall be place as the purchaser in his absolute discretion may determine. Work under the Contract shall, if reasonably possible, continue during arbitration Proceedings.</p> <p>c. In case order is concluded on the public Sector Undertakings, the following Arbitration Clause will be applicable.</p>		
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<p>In the event of any dispute or differences relating to the interpretation and application of the provisions of contracts, such dispute or difference shall be referred by either party to the Arbitration of one of the Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Bureau of Public Enterprises. The Indian Arbitration and Conciliation Act, 1996 shall not be applicable to the Arbitration under this clause. The award of the arbitrator shall be binding upon the parties to the dispute provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law &amp; Justice, Government of India. Upon such Additional Secretary when so authorised by the Law Secretary whose decision shall bind the parties finally and conclusively. The parties to the dispute will share equally the cost of arbitration as intimated by the arbitrator.</p> <p><b>18. APPLICABLE LAW AND JURISDICTION</b></p> <p>The laws of India shall govern this purchase order for the time being in force. The Courts of Andhra Pradesh, India only shall have jurisdiction to be with and decide any legal matters or disputes what so ever arising out of the purchase order.</p> <p><b>19. FORCE MAJEURE</b></p> <p>Should a part or whole work covered under this purchase order be delayed due to reasons of Force Majeure which shall include legal lockouts, strikes, riots, civil commotion, fire accident, quarantines, epidemic, natural calamities and embargoes the completion period for work, equipment referred to in this agreement shall be extended by a period not in excess of the duration of such Force Majeure. The occurrence shall be notified within reasonable time.</p> <p><b>20. GUARANTEES</b></p> <p>The Supplier shall guarantee that the items and equipment furnished by him is in conformance with the requirement of the specifications. Goods covered by the contract shall be free from defects in materials or workmanship for a period of <b>Twelve months</b> from the date of successful commissioning &amp; acceptance by Department.</p>		
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<p><b>21. WARRANTY</b></p> <p>The bidder shall provide <b>12 months'</b> warranty for the entire system for a defect liability, after final official handing over at his cost. During this period, supplier has to provide and adhere to the following:</p> <p>21.1. He has to attend quarterly based preventive maintenance visits and breakdown maintenance calls. All the defective components have to be replaced or rectified on one to one basis.</p> <p>21.2. Break down maintenance should be responded within 48 Hours' time and shall be completed within 48 Hours after respond.</p> <p>21.3. Department will not provide any transport/accommodation.</p> <p>21.4. In case vendor failed to attend and repair the system within 7 days from the date of reporting the problem, Department will reserve right to forfeiting the BG apart from withheld of any payment payable to the vendor.</p> <p>21.5. Where defects in items are remedied under warranty, the period for which the warranty operates shall be extended by such period, as the items were not available to SDSC SHAR. Where defect items are replaced by new ones, the full warranty period stipulated in the purchase order shall apply to such replacement items as from the date of their delivery.</p> <p><b>22. SCHEDULE OF PRICE</b></p> <p>22.1. CONTRACT price shall include all costs of <i>"procurement, manufacture, supply, transportation, inspection, erection, testing and commissioning of mobile launch pedestals for PIF project"</i>, shop testing, packing, forwarding, transport to site, unloading, storage, all risk coverage, erection, installation, testing &amp; evaluation and commissioning of equipment including any other cost for proper and complete execution of the CONTRACT.</p> <p>22.2. CONTRACT prices shall also include all travelling expenses, living expenses, salaries, overtime, benefit and any other compensation for engineers, supervisors, skilled, semiskilled workmen, watch and ward staff, labours and other staff employed by the Supplier, cost of tools and tackles required for erection and other consumable material required, materials, equipment and all taxes, duties, and levies as applicable on the date of submission of bid.</p> <p>22.3. Erection charges including third party inspection charges shall be firm and fixed even for the <b>± 10%</b> quantity variations also.</p>		
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<p>22.4. Price shall be firm &amp; fixed and the contractor has to agree for the same rates for the <b>± 10%</b> quantity variations also.</p> <p>22.5. Supplier shall agree for addition/ deletion of the works for the same quoted unit rates and such variation is limited to <b>+/-10%</b> of the ordered quantities.</p> <p>22.6. The rate quoted shall be on FOR SDSC SHAR, Sriharikota basis.</p> <p>22.7. The taxes applicable for supply and erection &amp; commissioning shall be indicated separately in the price bid. If the offers submitted by the tenderers are silent on taxes, it will be presumed that quoted rates are inclusive of taxes &amp; duties and no claim in this regard will be entertained later.</p> <p><b>23. DISCOUNTS</b></p> <p>Tenderer shall not indicate any discount separately and quoted price should be after deducting the discount.</p> <p><b>24. MODE OF PAYMENT</b></p> <p>All the payments due to Supplier will be made in Indian currency by crossed "Account Payee" cheque sent to the registered office of the Supplier. Bidders can submit the banker details and payments can also be made through ECS.</p> <p><b>25. TERMS OF PAYMENTS</b></p> <p>General guideline TERMS OF PAYMENTS are as indicted below. Any deviation to these payment terms to be brought out.</p> <p><b>25.1. FOR SUPPLY OF ITEMS (i.e. supply of fabricated items, supply of fabricated items with normal machining , supply of fabricated items with heavy machining)</b></p> <p>25.1.1. <b>30%</b> of supply cost as advance against submission of bank guarantee for an equal amount from a reputed nationalized/scheduled bank and shall be valid till Contract completion period. Format of Bank guarantee shall be obtained from Department after award of contract.</p> <p>25.1.2. <b>60%</b> of supply cost payment against receipt of material at Purchasers / Department site on pro-rata basis as decided by department, along with GST (including for advance portion).</p> <p>25.1.3. <b>10%</b> of supply cost after successful commissioning &amp; acceptance by Department of equipment and system covered under contract and against submission of Performance bank guarantee of equal amount valid till warranty period plus 2 months claim period.</p>		
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**25.2. FOR ERECTION, TESTING AND COMMISSIONING OF MLPs AT SITE**

25.2.1. **20%** of erection cost as mobilization advance after mobilization at site & against submission of bank guarantee valid till erection, commissioning and acceptance.

25.2.2. **70%** of erection cost against pro-rata progress at site (duly accepted by Department) along with GST (including for advance portion).

25.2.3. **10%** of erection cost along with GST after successful commissioning and acceptance by Department of equipment and system covered under contract and against submission of performance bank guarantee of equal amount valid for guarantee/warranty period.

**25.3. THIRD PARTY INSPECTION**

25.3.1. The third party inspection shall be arranged by contractor as per the approved agencies mentioned in section F10.

25.3.2. The third party inspection charges shall not be paid by department separately. Vendor has to include third party inspection charges in the quoted unit rates.

**25.4. PERFORMANCE BANK GUARANTEE**

25.4.1. The supplier shall guarantee for the performance of the equipment by providing bank guarantee in favour of the Department for an amount equivalent to **10 %** (ten percent) of the total value of this contract valid till the warranty period of the contract plus 3 months claim period.

25.4.2. The performance bank guarantee shall be submitted by the supplier with in fifteen days from the date of accepting the equipment as per the CONTRACT. Format for the performance bank guarantee shall be obtained from the Department.

**26. DELIVERY SCHEDULE**

The realization of fabrication works within the schedule is very essential. Hence, bidders are requested to adhere to the schedules given below. Contractor shall follow the following schedule for executing the contract:

S.No	Description of Target	Responsibility	Target Completion Date
1	Purchase Order release	Dept.	T
2	Procurement, fabrication / machining, control assembly, inspection, transportation, handling and storage at	Vendor	T + 8 months

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	site.		
3	Department clearance for erection and commissioning.	Dept.	T1> = (T + 8 months)
4	Erection & Commissioning of the equipment.	Vendor	T1 + 2 months

**27. LIQUIDATED DAMAGES**

In the event of the Supplier failing to complete the work within the delivery period specified in the contract agreement or in extension agreed thereto, Department shall reserve the right to recover from the Supplier as liquidated damages, a sum of 0.5 percentage per week or part thereof of the undelivered portion of the total contract price of equipment or work. However, the total liquidated damages shall not exceed **10.0** percentage of the total Contract price. The LD reckoning date shall be **T+8 months** for supply portion and **T1+2 months** from the date of Department clearance for erection & commissioning portion of the contract price.

**28. DISCLOSURE AND USE OF INFORMATION**

28.1.1. If the documents supplied by SDSC SHAR are marked **“Strictly Confidential”**, supplier shall take all necessary steps to ensure the same.

28.1.2. Supplier shall guarantee that all information and data received during contract period is confidential and should not be revealed to any other.

28.1.3. Execution of Purchase Order from SDSC SHAR shall be classified as **“confidential”** within the meaning of the Official Secrets Act and will not be divulged to any third party without prior written permission of SDSC SHAR. All drawings & documents shall be returned after execution of work.

28.1.4. No publicity of any kind whatsoever regarding this work shall be given without prior clearance from SDSC-SHAR

**29. ACCEPTANCE AND REJECTION:**

On completion of the work or part of the work as specified in the contract, the representative of the Department referred to, shall check as soon as possible, but in any event within one month of notification of readiness for acceptance that the work performed complies with the contract requirements as regards quantity and quality.

In the event of rejection of any of the articles, whereby the Supplier feels himself aggrieved, he may within eight days of the receipt of notification of

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<p>rejection and before such articles have been removed from the place of inspection, give the Department notice of objection. Such objection shall be considered by a Board of Appeals of the Department. The Department shall, without prejudice to the arbitration clause in the contract, take a decision upon Presentation of the Board's findings.</p> <p>On completion of tests, the members of the Inspection Organisation of the Department or Inspection agency appointed by Department shall prepare a report, which must be countersigned by the Supplier.</p> <p><b>30. SUSPENSION:</b></p> <p>30.1. Department may notify the Supplier to suspend performance of any or all of his obligations under the Contract. Such notice will specify the reasons for suspension and the effective date of suspension. Supplier there upon shall suspend the performance of such obligations until ordered in writing to resume performance of Contract by Department.</p> <p>30.2. If Supplier's performance or his obligations remain suspended or the rate of progress is reduced, then, the time of completion will be suitably extended and all costs incurred by Supplier as a result of suspension or reduction in rate of progress will be paid to Supplier provided that the suspension or reduction in the rate of progress is not by reasons of Supplier's default or breach of Contract.</p> <p><b>31. CANCELLATION</b></p> <p><b>31.1. GENERAL RULE</b></p> <p>The Department shall have the right at any time to cancel a contract either wholly or in part by giving written notice by registered mail. From the time of receipt of the written notice, the Supplier shall undertake to observe the instructions of the Department as to the winding up of the contract both on his own part and on the part of his sub-suppliers.</p> <p><b>31.2. WITHOUT FAULT OF SUPPLIER</b></p> <p>In the case of cancellation of a contract by the Department without any fault of the Supplier, the Supplier shall on receipt of Department's instructions forthwith take the necessary steps to implement them. The period to be allowed to implement them shall be fixed by the Department after conclusion with the Supplier and, in general, shall not exceed three months.</p>		
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<p>Subject to the Supplier confirming, Department shall take over from the Supplier at a fair and reasonable price all finished parts not yet delivered to the Department, all unused and undamaged material, bought-out components and articles in course of manufacture in the possession of the supplier and property obtained by or supplied to the Supplier for the performance of the contract, except such material, bought-out components and articles in course of manufacture as the supplier shall, with the agreement of the Department, elect to retain.</p> <p><b>31.3. WITH FAULT OF SUPPLIER:</b></p> <p>The Department reserves the right, after full consideration of all relevant circumstances, including the observations of the supplier, to cancel a contract in any of the following circumstances.</p> <p>31.3.1. In the event of the Supplier's failure to meet</p> <ol style="list-style-type: none"> <li>I. The Technical requirements of the Supplier.</li> <li>II. The Progress and/or delivery requirements.</li> </ol> <p>31.3.2. If the Supplier has not observed the provisions of the contract concerning the disclosure and use of information provided by the Department.</p> <p>31.3.3. If the Supplier fails to comply with the provisions of the contract concerning the equipment, supplies and technical documents made available by the Department.</p> <p>31.3.4. If the Supplier transfers his contract without the Department's authorization or concludes sub-contracts against the Department's explicit directives.</p> <p>In the event that Supplier unjustifiably repudiates the Contract or fails to ship or dispatch all or part of the goods ordered for reasons other than those attributed to the Department's actions or as provided in the Force Majeure clause, the Department may, by giving an appropriate notice in writing to the Supplier, fix a Date of Essence by which the Supplier must complete the dispatch in full. If the Supplier fails to do so, the Department, in addition to his right to recover Liquidated Damages in terms of the Contract, shall also have the right to cancel this Contract and make substitute purchases from other sources. If the goods are in a partial state of fabrication, Department may have the fabrication completed by other means, in which event Supplier shall be liable to Department for the</p>		
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<p>additional expenses incurred thereby, but shall not have any claim on savings, if any, in such cases.</p> <p>In the event of such cancellation, the Department shall unless otherwise specified in the contract, only pays.</p> <p>- In the case of a fixed-cost contract for the supply of equipment or material. The contractual value of items delivered and accepted under the contract before receipt of notification of cancellation, or to be accepted under the special conditions of cancellation.</p> <p>- In the other cases.</p> <p>A fair and reasonable price in respect of such work as has been carried out prior to the receipt by the Supplier of notification of cancellation.</p> <p><b>32. FRAUDULENT PRACTICES, BRIBERY AND CORRUPTION OF GOVERNMENT SERVANTS</b></p> <p>The contractor represents and undertakes that he has not given, offered or promised to give, directly or indirectly any amount, gift, consideration, reward, commission, fees, brokerage or inducement to any person in service of the department or otherwise in procuring the contracts or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of the contract or any other contract with the Government for obtaining a contract or showing or forbearing to show favour or disfavour to any person in relation to the contract or any other contract with the government. Any breach of the aforesaid undertaking by the contract or any one employed by him or acting on his behalf or for his benefit (whether with or without the knowledge of the contractor) or the commissioning of any offence by contractor or any one employed by him or acting on his behalf, as defined in chapter IX of the Indian Penal code, 1860 or the prevention of corruption Act. 1947 or any other Act enacted for the prevention of corruption shall, without prejudice to any other legal action, entitle the Department to cancel the contract either wholly or in part, and all or any other contracts with Contractor and recover from the Contractor such amount or the monetary value thereof and the amount of any loss arising from such cancellation without any entitlement or compensation to the Contractor. The Department will also have the right to recover any such amount from any contracts concluded earlier between the contractor and the Government of India. The contractor will also be liable to be debarred from entering into any contract with the Government of India for a</p>		
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<p>minimum period of five years. A decision of the Department to the effect that a breach of the undertaking had been committed shall be final and binding on the Contractor.</p>		
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<p style="text-align: center;"><b><u>PROJECT INFORMATION</u></b></p> <p>1.0 Project Title : PSLV Integration Facilities (PIF)</p> <p>2.0 Location of Plant : Shriharikotta, AP</p> <p>3.0 Elevation : 4.2 m</p> <p>4.0 Access to Site : Road From North of Chennai is apprx. 100 km. From East of Sullurpetta in Nellore dist is approx 28km.  Rail Chennai – Vijayawada rail track line.</p> <p>5.0 Terrain : Uneven with level varying significantly.</p> <p>6.0 Climatic Conditions</p> <p>a) Temperature</p> <p>Mean of daily max : 42.2 °C</p> <p>Mean of daily min. : 11.8 °C</p> <p>Maximum Temperature : 44.6 °C</p> <p>i. Design ambient temperature : 45.0 °C for performance guarantee</p> <p>ii. For electrical system design : 50 °C</p> <p>b) Relative humidity</p> <p>i. Range : 15% to 100%</p> <p>ii. Design relative humidity : 70% for performance guarantee</p> <p>c) Rainfall</p> <p>i. Annual average maximum : 1331.3 mm</p> <p>7.0 Wind Load</p> <p>Basic wind speed : 65m/s (Enhanced by a factor 1.3)</p> <p>8.0 Seismic Data : As per IS : 1893 latest issue</p>		
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<p>Zone : Zone III</p> <p>9.0 Auxiliary Power Supply</p> <p>a. Construction power : 415 V <math>\pm</math> 10%, 3 phase, 4 wire, 50 Hz <math>\pm</math> 5%, AC supply at one place. Further distribution by Bidder</p> <p>b. All devices shall be suitable for continuous operation over the entire range of voltage and frequency indicated below without change in their performance :</p> <p>AC supply : Voltage variation <math>\pm</math> 10%</p> <p>Frequency variation <math>\pm</math> 5%</p> <p>Combined voltage &amp; Frequency variation: 10%</p>		
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<p><b><u>TECHNICAL SPECIFICATIONS FOR MLP</u></b></p> <p><b>1.0 SCOPE</b></p> <p>This specification covers the general requirements for procurement, supply of material, manufacture, testing, inspection at CONTRACTOR'S works, packing, forwarding, transportation, transit insurance, delivery at SDSC SHAR site, erection/installation, testing, commissioning at SDSC SHAR site and carrying out performance / acceptance tests of the equipment, materials and services as per enclosed data sheets and other documents.</p> <p><b>2.0 BACKGROUND INFORMATION</b></p> <p>The Mobile Launch Pedestal (MLP) is a fabricated steel structure for launching PSLV. It provides the platform for vehicle integration at Integration Building, transportation of launch vehicle from Integration Building to Launch pad using bogie on rail track and provides the platform for Launch vehicle during lift off.</p> <p>The Mobile Launch Pedestal can be moved on the Bogie system to the launching site and then fixed to the ground through anchor legs. The Launch vehicle is assembled on the MLP in the PSLV Integration Facility and then the MLP is moved on rails to the launching site.</p> <p>Totally 3 no's of launch pedestals were envisaged under the scope of work. Vendor to note the BOQ (Section E2) was given for each launch pedestal.</p> <p><b>3.0 EQUIPMENT AND SERVICES TO BE PROVIDED BY CONTRACTOR</b></p> <p>3.1 SUPPLY OF ALL MATERIALS TO SITE INCLUDING BUT NOT LIMITED TO THE FOLLOWING ITEMS:</p> <p>3.1.1 Pedestal Deck of overall size 10 m x 10 m X 7.267m as shown in drawings.</p> <p>3.1.2 Anchor legs (4 Nos.) on which Pedestal Deck will be supported</p> <p>3.1.3 Bearing plates (4 Nos) including the handling arrangement for the bearing plates which is mounted on the Anchor legs.</p> <p>3.1.4 Replaceable Rings / Interface Rings to be located on the Central Annular structure.</p> <p>3.1.5 Additional, anchor legs / bottom supports, lugs, bolts, nuts required during assembly of modules of MLP at shop and prior to welding of modules at site.</p> <p>3.1.6 Painting of entire fabricated modules of MLP shall be carried out by vendor at vendor site as well as SDSC SHAR site also.</p> <p>3.2 Preparation / Revision of Drawings and Documents</p> <p>3.2.1 After the award of contract, the PURCHASER shall provide a set of drawings for the proposed Mobile Launch Pedestal to the CONTRACTOR. The CONTRACTOR shall prepare shop floor drawings in order to incorporate any subsequent modifications required in the drawings before and during the</p>		
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<p>manufacture of MLP. Some of the conditions due to which modifications in drawings may be necessary are stated here below:</p> <ul style="list-style-type: none"> <li>Preparation / Revision of drawings to incorporate the Technical Deviations / Design modifications proposed by the CONTRACTOR and accepted by the PURCHASER.</li> <li>Preparation / Revision of drawings to incorporate modifications in the Mobile Launch Pedestal as specified by the PURCHASER after the award of contract.</li> <li>Any other changes in the design / drawings for MLP found necessary to be carried out during various stages of manufacture and erection of MLP</li> </ul> <p>3.3 Shop Erection, Inspection &amp; testing, Packing and Forwarding, transportation to site, unloading &amp; storage at site.</p> <p>3.4 Erection, Commissioning and Acceptance Testing of MLP at SDSC SHAR site</p> <p>3.5 Erection of one set of ground anchors for commissioning of MLP shall be carried out by contractor at SDSC SHAR site. The related minor civil works also shall be included in the scope of work under the contractor.</p> <p><b>4.0 EQUIPMENT AND SERVICES TO BE PROVIDED BY OTHERS NOT IN BIDDERS SCOPE</b></p> <p>4.1 Bogie with hauler and Jacking system for MLP</p> <p>4.2 Rail track for movement of MLP (on bogie) at site</p> <p>4.3 Ground Anchors (4 Nos.)</p> <p>4.4 Grouting of Ground Anchors at Site</p> <p><b>5.0 TECHNICAL SPECIFICATION OF MLP</b></p> <p>The Mobile Launch Pedestal (MLP) is composed of the following major subassemblies / components:</p> <ol style="list-style-type: none"> <li>Base structure(Pedestal Deck)</li> <li>Central Annular Structure (CAS)</li> <li>Anchoring Interfaces</li> </ol> <p>A brief description of the constructional features required for each of the above subassemblies / components is listed here below:</p> <p><b>5.1 PEDESTAL DECK</b></p> <p>5.1.1 The Pedestal Deck shall be made of structural steel plates arranged in form of grid of multiple flanges and webs. The deck is designed to transfer the different loads from PSLV vehicle and other applicable loads during the integration, transportation and final positioning at launch pad to the bogie system / anchor system. The MLP shall be manufactured so as to achieve the accuracy requirements specified for the top surfaces of CAS.</p>		
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<p>5.1.2 The bottom of the deck shall be at EL 2100 mm and the top of the deck shall be at EL 5500 mm. There shall be two intermediate levels at EL 2750 mm and EL 4750 mm also. The distance between them serves as a passage all round the interior of the MLP. It has got openings for entry and exit. Between the intermediate levels, a 1.6m x 0.6m passage / walkway shall be provided for accommodating service lines, safety equipment, etc. in the interior of the pedestal deck structure. Suitable entry and exit openings shall be provided for venting of exhaust gases. Ladders shall be provided for access from the floor level to the passage inside MLP.</p> <p>5.1.3 Suitable cutouts shall be provided on top of the MLP for allowing the strap-on jet and the core jet to flow. The outermost strap-ons are located at an angle of 40° to the horizontal axis. Hence the width of the cutouts for Jet flow are to be kept larger by 100 mm on one side. Hence, the total width of the cutout (including refractory lining) is 1308 mm as shown in the drawing.</p> <p>5.1.4 To facilitate the aspects of fabrication, transportation, handling and erection of pedestal deck at site, the pedestal deck shall be made up of modules. The maximum size of the module, which can be transported, shall be restricted and suitable for road transportation. The proposed modules are to be configured based on the maximum size, and also the maximum weight to be handled for any module.</p> <p>Refer drawing no. TCE.10977A-ME-857-GA-0010R0 for the proposed configuration and the sizes of various modules.</p> <p>5.2 <u>CENTRAL ANNULAR STRUCTURE (CAS)</u></p> <p>It shall be a circular steel structure with height 1.767 m above the top of the pedestal deck. It shall include a replaceable interfacing ring of height 295 mm. The function of CAS is to transfer the vehicle load to the base structure. It houses pipelines routed from MLP deck to Vehicle.</p> <p>CAS shall have a circular opening of 2800 mm diameter for exhaust of Jet.</p> <p>5.3 <u>ANCHOR LEGS AND GROUND ANCHOR SYSTEM</u></p> <p>(a) The Pedestal Deck shall be supported on four Anchor Legs. The interface details of Ground Anchors shall be provided separately as per the existing system. The CONTRACTOR shall ensure that the Anchor legs are suitable for assembly with the Ground Anchors.</p> <p>(b) The Anchor Legs shall also have the bearing plates and its handling arrangements (consisting of chain pulley blocks of 2 ton capacity) as in the system existing at site. The bearing plates are used for creating a clearance between MLP and the bogie so that the bogie can be retracted.</p> <p>(c) Bogie has to be positioned below MLP. A thick bearing plate is inserted between MLP anchor leg and ground anchor top surface to create clearance between MLP and bogie in order to facilitate retraction of the bogie system after parking of MLP. When the MLP is on wheel bogie, the 35 mm thick bearing plate below anchor legs is removed.</p>		
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<p>(d) Distance between anchor legs shall be maintained as 8.8m in front view and 8m in side view (along the rails). The cross section of anchor legs shall be 600 mm (width) x 1000 mm (depth) so as to have sufficient space for bogie movement as per drawings.</p> <p>5.4 <u>BOGIE SYSTEM WITH MLP RAIL RACK</u></p> <p>(a) The MLP shall be supplied to suit the bogie system with MLP Rail Track. The CONTRACTOR shall ensure that the MLP to be supplied by him is suitable for assembly with the Bogie system. For this purpose, dimensional measurements at site to determine the 'AS BUILT' dimensions for all interfaces between MLP &amp; Bogie may be carried out by CONTRACTOR at his own cost.</p> <p>(b) MLP with a fully assembled PSLV vehicle will be transported on bogie system from PIF to launch pad.</p> <p>5.5 <u>ACCURACY REQUIREMENTS TO BE FULFILLED BY MLP</u></p> <p>5.5.1. Top vehicle mounting surface accuracy for CAS in combination with interface ring shall be less than 30 arc seconds under the condition of full vehicle load of 320 tons loaded on the MLP.</p> <p>5.5.2. The maximum absolute value of deflection on top of CAS shall be less than 1.5 mm under the condition of full vehicle load of 320 tons loaded on the MLP.</p> <p>5.6 <u>INSTRUCTIONS FOR FABRICATION &amp; ERECTION</u></p> <p>As the system is used for launching operation, it demands workmanship of the highest order, in which high level of accuracy in the manufacture of various subassemblies is required in order to meet the stringent accuracy requirements specified for the vehicle mounting surfaces. General instructions for fabrication and Erection are specified in the subsequent clauses.</p> <p>5.6.1. All welding shall be carried out by qualified and approved welders.</p> <p>5.6.2. Unless otherwise specified on drawings, tolerances for fabrication shall be as per ISO:13920.</p> <p>5.6.3. Edge preparation shall be carried out for all plates before welding.</p> <p>5.6.4. Unless otherwise specified on drawings, all butt welds shall be full penetration welds.</p> <p>5.6.5. Unless otherwise specified on drawings, all fillet welds shall be 50% of the minimum plate thickness and shall be on both sides of the plate. Also, the weld shall be continuous.</p> <p>5.6.6. Welding sequence shall be such that the distortion and residual stresses are minimised. All welds shall be deposited in proper sequence so as to balance</p>		
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<p>the applied heat as far as possible. (A wandering sequence shall be used whenever necessary).</p> <p>5.6.7. The procedure to be followed by CONTRACTOR for all weld repairs shall be subject to approval by the PURCHASER.</p> <p>5.6.8. Threaded joints that are to be seal welded shall be thoroughly cleaned before welding.</p> <p>5.6.9. Stress relieving shall be carried out for all fabricated components prior to its machining. Stress relieving shall also be carried out for all the fabricated modules &amp; Anchor legs of MLP before machining.</p> <p>5.6.10. In order to achieve the accuracy requirements specified for the top vehicle mounting surface of CAS, machining is required to be carried out at all interfaces between Anchor-legs / MLP / CAS / Replaceable rings. Interfaces between any two modules are also to be machined. Also, during erection at site, alignment of top surfaces of Anchor Legs &amp; also of the top machined surfaces of MLP have to be monitored and controlled.</p> <p>5.6.11. The MLP is made up of modules which have to be welded to each other at site. From past experience in manufacture of MLPs, it has been established that in order to achieve the final accuracy requirements for the top vehicle mounting surface of CAS, it is necessary to monitor &amp; control the distortion taking place on the MLP during welding of the modules at site. Hence, it will be necessary to monitor the distortion of MLP &amp; modify the sequence of welding as required in order to minimise / eliminate the distortion. The Contractor shall hire the services of Welding Research Institute, Trichy at his own cost for monitoring and finalising the welding sequence during the welding of modules at site.</p> <p>5.6.12. The assembly of complete MLP (inclusive of one set of Ground Anchors) is to be carried out at CONTRACTOR's works. For this purpose, the modules shall be rigidly bolted to each other through temporary lug supports which are to be welded on all the modules. Additional bottom supports / anchor legs shall also be provided to support the various modules of MLP during various stages of erection at CONTRACTOR's works.</p> <p>After completion of assembly, the MLP shall be tested for compliance with assembly drawings and for its performance requirements (inclusive of demonstration of specified accuracy for the top vehicle mounting surfaces of CAS). After completion of testing and demonstration of performance requirements to the entire satisfaction of the PURCHASER, necessary dowels shall be provided between interfaces of all modules before dismantling of shop assembly.</p> <p>5.6.13. Prior to welding of the various modules of MLP at site, the modules shall be again rigidly bolted to each other through the temporary lug supports which had been welded to the modules during the assembly at VENDOR's shop. Additional bottom supports / anchor legs shall also be provided to support the various modules of MLP during various stages of erection. After the modules are welded together, the temporary lugs welded to the modules are to be removed. All items like temporary lug supports, fasteners, additional bottom supports / anchor legs, special tools &amp; tackles etc. required during erection at</p>		
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CONTRACTOR's Works as well as at PURCHASER's site shall be supplied by the CONTRACTOR.

5.6.14. All Handling equipment with necessary tools, tackles and slings required for erection of MLP at site shall be provided by the CONTRACTOR. No handling equipment shall be provided by the DEPARTMENT.

5.6.15. NO PURCHASER stores facility is provided for storing and erection works.

5.6.16 Preliminary specifications of MLP will be provided to bidder along with tender. But detailed fabrication drawings showing dimensional tolerances will be provided along with PO only.

**3.0 CODES AND STANDARDS**

3.1 All equipment, systems and works covered under this specification shall comply with all currently applicable statutes, regulations, standards and safety codes in the locality where the equipment will be installed.

3.2 In particular, the latest editions of following standards are applicable:

Steel for general structural purposes	IS 2062
Rolled Sections and Special sections	IS 808, IS 1161, IS 1173, IS 1252, IS 1730, IS 1731, IS 1732, IS 1863, IS 1864, IS 2314

3.3 Other national standards established to be equivalent or superior to the codes and standards specified are also acceptable. The BIDDER shall furnish English translation of all standards specified in this specification.

3.4 In the event of any conflict between the codes and standards referred to in the specification and the requirements of this specification, the more stringent of these requirements shall govern.

3.5 Unless indicated otherwise, all codes and standards referred to in this enquiry specification shall be understood to be the latest version on the date of offer made by the Bidder.

**7.0 SPECIFIC REQUIREMENTS / INSTRUCTIONS TO BIDDERS**

7.1 BIDDER'S OFFER

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<p>7.1.1 In case of any deviations from the technical specifications, the BIDDER shall indicate the same in Schedule of deviations. If no deviations are listed in the schedule of deviations, it shall be considered that the BIDDER complies in total with the technical specifications. Any deviations indicated elsewhere other than schedule of deviations in the offer will not be accepted.</p> <p>7.1.2 The BIDDER is advised to furnish all information called for in summary of data to be furnished along with the bid (Clause 14.0 of this section)</p> <p>7.1.3 BIDDER is advised to quote for the complete scope and partial response will not be entertained. In case of few items which do not directly fall under BIDDER's manufacturing range and / or not available from indigenous source, BIDDER should take the responsibility upon themselves to arrange to procure them and supply to ensure that their offer is complete in all respects.</p> <p>7.2 All bought out items supplied shall have capacities not less than those stated in this specification and necessary test certificates shall be furnished in this regard. However, if the BIDDER considers that higher capacity is required to meet guarantee requirements, he should offer the same and substantiate the same by calculations.</p> <p>7.3 The BIDDER shall specify all the Design modifications which he considers are necessary for him to carry out in order to meet the guarantee requirements. The details of design modifications proposed to be carried out shall be attached as Annexure to the Schedule of Deviations from Technical Specifications.</p> <p>7.4 Any items which may not have been specifically mentioned herein but are needed to complete the equipment / system shall also be treated as included and the same shall also be furnished and erected, unless otherwise specifically excluded as indicated.</p> <p>7.5 All tools and tackles required during various stages of execution of order right from manufacture at shop to the erection and testing at site shall be in the scope of the Contractor.</p> <p><b>8.0 <u>RELIABILITY AND QUALITY ASSURANCE PLAN</u></b></p> <p>THE INSPECTION PROCEDURES SHALL BE CATEGORIZED AS FOLLOWS:</p> <p>(a) Category A: Stage wise and final inspection including review of documents by Department.</p> <p>(b) Category B: Stage wise and final inspection including review of documents by the Contractor. Department shall perform final inspection and review documents.</p> <p>(c) Category C: Final inspection and review of documents shall be carried out by the Contractor. Department shall carry out the final review of documents.</p> <p>THE MINIMUM REQUIREMENTS FOR ENSURING QUALITY AT VARIOUS STAGES ARE SPELT OUT BELOW. HOWEVER, THE RELIABILITY AND QUALITY ASSURANCE PLAN SHALL BE PREPARED BY THE VENDOR</p>		
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AND WILL BE REVIEWED AND APPROVED BY DEPARTMENT.

The following are the basic inspection requirements to be followed upon receipt of raw material:

Review of material test certificates	Category C
UT of plates for thickness greater than >20mm	Category C

The following are the minimum in-process tests that shall be carried out:

Welding procedure & welder / welding operator's performance qualification	Category C
100% MT / PT for flame cut edges for plate thickness exceeding 38mm.	Category B
100% PT after back gouging	Category B
100% MT / PT for fillet welds when both plates exceed 25mm thickness.	Category A
100% MT / PT for fillet welds between tension flanges & webs.	Category A
100% RT / UT for butt welds	Category A

Heat treatment shall be carried out on the following:

For carbon steel plates where thickness exceeds 20mm	Category C
All other components as referred to in the drawings	Category C

The following are the final inspection / tests that shall be carried out during various stages of manufacture, as applicable:

Visual and dimensional inspection of components / sub-assemblies	Category A
Blue matching for bolted components	Category A
Complete assembly of MLP at VENDOR's shop and testing for performance requirements	Category A
Complete assembly of MLP at site and testing for performance requirements.	Category A

8.1 The schedule of tests stated above are indicative and not exhaustive in nature. CONTRACTOR shall carry out any other tests at shop / site as per directions of PURCHASER.

9.0 **INSPECTION AND TESTING PROCEDURES AND SCOPE OF INSPECTION**

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9.1	Raw Material Inspection shall be carried out at the Vendor's works for compliance of the raw materials to the specified standards.	
9.2	Bought out components shall be inspected either at Vendor's works or at the Sub-contractor's premises for compliance with the Specifications.	
9.3	Fabricated components shall be inspected at the Vendor's works for compliance with the component drawings. Sub-Assemblies shall be inspected at the Vendor's works for compliance with the Sub-Assembly drawings and for performance requirements. Also, full Assembly of the MLP shall be inspected at Vendor's works after shop assembly for compliance with assembly drawings and performance requirements.	
9.4	Full Assembly of the MLP shall be inspected at Purchaser's premises as well as at SDSC SHAR site assembly for compliance with the Assembly Drawings and performance requirements.	
9.5	Third party inspection by M/s Lloyds / M/s M N Dastur / M/s Bureau Veritas / M/s Det Norse Veritas duly approved by the PURCHASER shall be arranged by the CONTRACTOR for the inspection of all raw material / Boughtout components, inspection during various stages of manufacture at CONTRACTOR's / SUB-CONTRACTOR's works and also for the inspection to be carried out during erection, performance testing and commissioning at site. All charges towards the third party inspection shall be borne by the CONTRACTOR.	
9.6	After the award of contract, CONTRACTOR shall prepare detailed Quality Assurance Plan (QAP) for inspection & testing of all subassemblies / components of the Mobile Launch Pedestals. The QAP shall be reviewed and approved by the Third Party Inspection Agency and the PURCHASER. Indicative QAPs for MLP is enclosed in Section C4 respectively of this specification.	
9.7	The procedure to be followed for testing the accuracy requirements for the top vehicle mounting surface of CAS shall be prepared by the contractor and submitted to department's review and approval.	
9.8	All measuring and testing instruments / equipment required for carrying out all tests at VENDOR's works and at PURCHASER's site shall be provided by the Contractor.	
9.9	CONTRACTOR shall furnish calibration certificates for the instruments to be used for testing at shop and site. The calibration certificates furnished by the CONTRACTOR shall not be more than 12 months old.	
10.0	<b><u>GUARANTEES AND PERFORMANCE REQUIREMENTS</u></b>	
	The Mobile Launch Pedestal shall perform satisfactorily to meet the guarantee requirements stated in this specification to the entire satisfaction of the PURCHASER.	
11.0	<b><u>ACCEPTANCE TEST</u></b>	
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11.1	After the entire installation work has been completed, the CONTRACTOR shall make all required adjustments until all guaranteed performance requirements are met. All instruments, services required for the above tests shall be furnished by the CONTRACTOR.	
11.2	If the stipulated performance requirements are not fulfilled, the CONTRACTOR shall make good the deficiency by providing it in every case, by altering and/ or replacing the parts or the whole equipment / system free of charge to the PURCHASER immediately. All rejected equipment shall be removed from the site at CONTRACTOR's expense.	
12.0	<b><u>SURFACE PREPARATION AND PAINTING</u></b>	
	The complete MLP shall be painted as per the instructions for painting enclosed as Section D of this specification.	
	The painting of MLP shall be carried out as per Section D of this specification as well as the PURCHASER's specific instructions for painting after the award of contract.	
13.0	<b><u>TENDER EVALUATION AND PENALTY FACTOR</u></b>	
13.1	<b><u>TENDER EVALUATION</u></b>	
13.1.1	The BIDDER shall comply with all systems / parameters specified in section B,C,D,E1,E2 and ANNEXURE F1 TO F10	
13.1.2	Deviation from the specifications, if acceptable to the PURCHASER in so far as practicable, will be converted to rupee value and added to the bid price to compensate for the deviation from the specification. In determining the rupee value of the deviations, the PURCHASER will use the parameters consistent with those specific in the documents and specifications and other information as necessary and available to the PURCHASER.	
14.0	<b><u>DATA TO BE FURNISHED ALONG WITH BID AND AFTER AWARD OF CONTRACT</u></b>	
	The BIDDER shall ensure the following documentation are prepared and submitted to PURCHASER for his review / record.	
14.1	<b><u>ALONG WITH BID</u></b>	
14.1.1	Description of the item offered along with catalogues, drawings, etc. along with deviations from Technical Specification and proposed Design modifications.	
14.1.2	All data sheet of the tender specification, duly filled in as applicable.	
14.1.3	Project execution plan .	
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<p>14.1.4 Bar chart for supply &amp; erection schedule indicating the date of completion of various activities so as to complete the execution of the contract within the time frame stipulated in the tender specification.</p> <p>14.1.5 All section F's duly filled in.</p> <p>14.1.6 Write-up on procedure proposed to be followed for erection of MLP to achieve the accuracy requirements specified for the top vehicle mounting surfaces of Replaceable ring/CAS.</p> <p>14.2 <u>AFTER AWARD OF CONTRACT</u></p> <p>14.2.1 Schedule of Assembly &amp; Detailed drawings and documents to be submitted for review &amp; approval with submission dates.</p> <p>14.2.2 Quality Assurance Plan (QAP)</p> <p>14.2.3 Bar chart for supply &amp; erection schedule indicating the date of completion of various activities so as to complete execution of the contract within the time frame stipulated in the LOI / Purchase order.</p> <p>14.2.4 Progress Reports</p> <p>14.2.10 As-built drawings.</p> <p>14.2.11 Quality Assurance documentation compiled for the project.</p> <p>14.2.5 The above list of documents is indicative and not exhaustive. The BIDDER / CONTRACTOR shall submit documents as specified in various sections of this specification and also as per the specific instructions of the PURCHASER.</p> <p><b>15.0 <u>FINAL DOCUMENTS</u></b></p> <p>TWO SETS OF THE FOLLOWING DOCUMENTS AND DRAWINGS ARE TO BE SUBMITTED ALONG WITH FINAL HANDOVER DOCUMENTS.</p> <p>15.1 Quality assurance documentation compiled for the project.</p> <p>15.2 Final as built drawings</p>		
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<p style="text-align: center;"><b>WELDING SPECIFICATION FOR SHOP AND SITE FABRICATED ITEMS</b></p> <p><b>1.0 <u>SCOPE</u></b></p> <p>This specification shall apply to shop and site fabrication of all welded joints in carbon steel and low alloy steel. The specification shall apply to all the joints indicated below:</p> <p>(a) Butt joints produced by double sided welding which produce the same quality of deposited weld metal on both inside and outside weld surfaces</p> <p>(b) Butt joints produced by single sided welding having backing strip which remains in place and full penetration butt weld without backing strip</p> <p>(c) Corner or those joints connecting two (2) members approximately at right angles to each other in the form of L or T Partial penetration welds of the groove type which are used for connections not subjected to external loading</p> <p>(d) Fillet welded joints of approximately triangular cross-section joining two surfaces at approximately right angles to each other and having a throat dimension at least 70% of the thinner of the parts being joined but not less than 6 mm</p> <p>1. Welds attaching nozzles and other connections</p> <p>2. Welds which are used to join non-pressure parts like supports, lugs, brackets, stiffeners and other attachments to the vessel wall</p> <p>Any other similar joint which is not specified above but may be encountered during fabrication</p> <p><b>2.0 <u>CODES AND STANDARDS</u></b></p> <p>2.1 The welding equipment, welding consumables, preheating, Post weld Heat Treatment (PWHT), other auxiliary functions and welding personnel shall comply with all currently applicable statutes, regulations and safety codes in the locality where the equipment are to be fabricated and installed. Nothing in this specification shall be construed to relieve the CONTRACTOR of this responsibility. Specifically, the latest editions of the codes and standards listed below shall apply:</p> <p>(a) ASME Boiler and Pressure Vessel Code (BPV Code), Section II Part C - Material Specifications for Welding Rods, Electrodes, and Filler Metals</p> <p>(b) ASME BPV Code, Section V - Non-destructive Examination (NDE)</p> <p>(c) ASME BPV Code, Section VIII Division 1- Rules for Construction of Pressure Vessels</p>		
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<p>(d) ASME BPV Code, Section IX - Welding and Brazing Qualifications  (e) American Society of Non-destructive Testing (ASNT) SNT-TC-IA-Recommended Practice  (f) Indian Boiler Regulations (IBR)  (g) Any other codes and standards specified in Section C or data sheet A of Section D of enquiry specification</p> <p>2.2 The codes and standards listed in para 2.1 forms an integral part of this specification. In the event of conflict between this specification and the codes and standards, the more stringent shall govern.</p> <p>2.3 If no specific requirements are given in this specification, the requirements of the applicable code shall govern.</p> <p><b>3.0 <u>WELDING PROCESSES</u></b></p> <p>The following welding processes shall be used:</p> <p>3.1 <u>GAS TUNGSTEN ARC WELDING (GTAW)</u></p> <p>3.1.1 The root pass of single-sided groove welds without backing</p> <p>3.1.2 Full penetration nozzle connection where other side is inaccessible</p> <p>3.1.3 Any butt and fillet weld on equipment with thickness 5 mm or less</p> <p>3.1.4 For all passes of butt and fillet welding of nozzles on equipment and integral piping of size 50 mm NB or smaller</p> <p>3.2 Shielded Metal-Arc Welding (SMAW)</p> <p>3.3 <u>SUBMERGED ARC WELDING (SAW)</u></p> <p>Maximum weld deposit per pass shall be 12.7 mm for carbon steel (P-1) and 9.5 mm for other materials.</p> <p>3.4 Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW) processes</p> <p>3.5 Other processes such as plasma-arc and electro-slag welding may be used only with the approval of the PURCHASER and depending upon the process and application proposed. These processes may require testing in addition to that specified by the governing procedure qualification code.</p> <p>3.6 Table 1 gives recommendations for welding processes to be used for carbon, low alloy and austenitic stainless steels.</p> <p><b>4.0 <u>WELDING CONSUMABLES</u></b></p> <p>4.1 The CONTRACTOR shall provide, at no additional cost, all the welding consumables such as electrodes, filler wires, flux, oxygen, acetylene and argon etc., in order to complete the welding in all</p>		
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<p>respects. The consumables shall be from reputed and approved manufacturers. All the consumables shall be approved by the PURCHASER.</p> <p>4.2 The electrodes and filler wires shall be of the class specified in Table 1 Welding Specification Chart.</p> <p>4.3 Electrode qualification test records shall be submitted for the PURCHASER's approval. The CONTRACTOR shall also submit batch test certificates from the electrode manufacturer for physical and chemical tests.</p> <p>4.4 Electrodes shall be in sealed containers and adequate care shall be taken for storage, strictly in accordance with the manufacturer's recommendations.</p> <p>4.5 Electrodes, which have been removed from the original containers, shall be kept in baking ovens as per the manufacturer's recommendations and, once these are taken out, shall be consumed within the time limits stipulated by the manufacturer. Care shall be taken in handling the electrodes to prevent any damage to the flux covering. Portable ovens shall be used for carrying the electrodes from the main oven to the field. Electrodes of different specifications shall be stored in different compartments of a baking oven to avoid mix up.</p> <p>4.6 The electrodes, filler wires and flux used shall be free from contamination such as rust, oil, grease and such foreign matter.</p> <p>4.7 Low hydrogen electrodes shall be used for weld joints in carbon steel if the wall thickness exceeds 19 mm and low alloy steel of all thicknesses except that non-low hydrogen electrodes shall be permitted for the root pass of carbon steel only.</p> <p>4.8 If ultimate tensile strength of base material permits, E 6010 electrodes may be used, for root pass of butt welds and for fillet welds, in carbon steel.</p> <p><b>5.0 <u>WELDING QUALIFICATIONS</u></b></p> <p>5.1 Qualification of the welding procedures to be used and the performance of welders and welding operators shall conform to the requirements of the BPV Codes and Section IX. For equipment under the purview of IBR, these shall also meet the requirements of IBR.</p> <p>5.2 No production welds shall be undertaken until the qualification requirements are completed to the satisfaction of the PURCHASER.</p> <p>5.3 When impact testing is required by the code or by the specification, these requirements shall be met in qualifying welding procedures.</p> <p>5.4 The CONTRACTOR shall be responsible for qualifying any welding procedure, welders and welding operators intended to be deployed. The CONTRACTOR shall submit the Welding Procedure Specification (WPS) for acceptance by the PURCHASER. After</p>		
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<p>approval by the PURCHASER, the procedure qualification test shall be carried out by the CONTRACTOR, at his own expense, duly witnessed by the PURCHASER. A complete set of test results, in specified format, shall be submitted to the PURCHASER for approval immediately completion of procedure qualification test. All tests as required by the BPV code Section IX or IBR shall be carried out. The WPS shall require re-qualification, if any of the essential variables or supplementary variables is altered.</p> <p>5.5 Welders and welding operators shall be qualified in accordance with BPV Code and Section IX or IBR, as applicable. The qualification shall be carried out in the presence of the PURCHASER. Only those welders and welding operators who are qualified by the PURCHASER shall be deployed on the job. For equipment under the purview of IBR, approval of the local IBR inspector shall be obtained by the CONTRACTOR.</p> <p>5.6 Welders and welding operators shall always keep their identification cards with them and shall produce them on demand. The CONTRACTOR shall issue the identity cards after the same are duly certified by the PURCHASER. Welder or welding operator, who is not in possession of the identity card, shall not be allowed to work.</p> <p>5.7 The CONTRACTOR shall use forms as per BPV code, section IX, form QW-482, form QW-483 and form QW-484. Other forms are also acceptable subject to approval by the PURCHASER.</p> <p>5.8 Unless agreed otherwise, the CONTRACTOR shall advise the PURCHASER, in writing, at least three (3) weeks before any welder or welding operator is deployed on the work, the names and qualifications of the proposed welders, welding operators and welding supervisors. It shall be the CONTRACTOR's responsibility to ensure that all welders and welding operators employed by him or his SUB-VENDORS/SUB-CONTRACTORS, on any part of the work either in the CONTRACTOR's or his SUB-SUB-CONTRACTOR's works or at site are fully qualified as required by the code. Each welder and welding operator shall qualify for all types of welds, positions and materials or material combinations he may be called upon to weld.</p> <p>5.9 Should the PURCHASER require to qualify or requalify any welder or welding operator, the CONTRACTOR shall make available, at no extra cost to the PURCHASER the men, equipment and materials for the tests. The cost of testing the welds shall be borne by the CONTRACTOR.</p> <p>5.10 Welding supervisors shall have qualifications such as engineering degree or engineering diploma in welding technology with adequate knowledge of welding consumables, welding machines, NDE and a minimum of five (5) years of experience in supervising welding of joints.</p> <p>5.11 All welding, including the tacking up of all welds shall be carried out by qualified welders and welding operators as per approved WPS. Any weld made by other than a qualified welder or welding operator or not carried out as per approved WPS shall be cut out and re-</p>		
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<p>welded.</p> <p>5.12 For purposes of identification and to enable tracing full history of each joint, each welder and welding operator employed on the work shall be given a designation. The welder and welding operator's designation and the date on which the joint was made, shall be stamped near the relevant joint and on the relevant drawings also. Copies of the drawings so marked shall be furnished to the PURCHASER for record purposes. For austenitic stainless steels, welder and welding operator's designation shall be applied with water -proof paint or by etching or stencilling machine that is not detrimental to the metal. Alternatively, record cards may be used.</p> <p>5.13 For each welder and welding operator, a record card shall be maintained showing the procedures for which he is qualified. These cards shall note the production welds, the date of the welding done, the type of defects produced and their frequency. The record shall be reviewed once in a week by the PURCHASER and those welders and welding operators whose work required a disproportionate amount of repair shall be disqualified from welding. Re-qualification of welders and welding operators disqualified more than three (3) times shall be entirely at the discretion of the PURCHASER. As far as possible, the qualification shall be carried out at the location (site or shop) where the actual fabrication and welding work is to be carried out.</p> <p><b>6.0 PREPARATION FOR WELDING</b></p> <p>6.1 Surfaces to be welded shall be smooth, uniform and free from fins, tears and other defects, which would adversely affect the quality of the weld. All welding faces and adjoining surfaces, for a distance of at least 50 mm from the edge of the welding groove or 12 mm from the toe of the fillet in the case of socket welded or fillet welded joints, shall be thoroughly cleaned of rust, scale, paint, oil or grease, both inside and outside.</p> <p>6.2 Joints for welding shall be as per the project specifications and approved fabrication drawings.</p> <p>6.3 Butt joints shall be prepared as per ASME BPV Code Section VIII Division 1, unless specified otherwise. For equipment under the purview of IBR, these shall be as per IBR. Any other end preparation which meets the WPS is acceptable.</p> <p>6.4 Internal misalignment shall be reduced by trimming but such trimming shall not reduce the finished wall thickness below the required minimum wall thickness. Trimming shall not be abrupt. It shall be tapered with a minimum slope of 1:3. Root opening of the joint shall be within the tolerance limits of the WPS.</p> <p>6.5 Welds shall be as per ASME BPV Code Section VIII Division 1 or in accordance with IBR for equipment under the purview of IBR.</p> <p>6.6 Reinforcing pads and saddles shall have a good fit with the parts to which they are attached. A tell-tale hole shall be provided on the side</p>		
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<p>of any pad or saddle to reveal leakage in the weld and to allow venting during welding and heat treatment. Pad or saddle shall be added, after the branch weld has undergone satisfactory visual and NDE.</p> <p>6.7 The ends shall be prepared by machining, grinding, flame cutting or plasma cutting. Where flame cutting is used, the effect on the mechanical and metallurgical properties of the base metal shall be taken into consideration.</p> <p>Flame cutting of alloy steel is not advisable. If alloy steel is cut using flame, the <sup>ISSUE</sup> heat affected zone shall be removed completely by grinding and/or machining. Magnetic Particle (MT) or Liquid Penetrant (PT) testing shall be carried out to ensure soundness of edges. However, flame cutting of carbon steel is permitted. Wherever practicable, flame cutting shall be carried out by machine. Machine flame-cut edges shall be substantially as smooth and regular as those produced by edge planning and shall be cleaned free of slag. Manual flame cutting shall be permitted only where machine flame cutting is not practicable and with the approval of the PURCHASER, and such surfaces shall be ground or dressed to a smooth finish as required by the specification and to the satisfaction of the PURCHASER. Slag, scale or oxides shall be removed by grinding to bright metal at least two (2) mm beyond the burnt area.</p> <p>6.8 Thermal cutting of carbon steel shall be performed under the same conditions of preheating and PWHT as for the welding of each class of material. However, PWHT is not required when:</p> <p>(a) The heat affected zone produced by thermal cutting is removed by mechanical means immediately after cutting. However, in any case, all remaining slag, scale or oxides shall be removed by grinding to bright metal at least two (2) mm beyond the burnt area, or</p> <p>(b) Thermal cutting is part of fabrication, manufacturing or erection sequence leading to a weld end preparation where welding immediately follows.</p> <p>6.9 On austenitic stainless steels, plasma cutting, machining or grinding methods shall be used for edge preparation. Flame cutting is not permissible. Cut surfaces shall be machined or ground smooth after plasma cutting. Stainless steel materials shall be ground with Al<sub>2</sub>O<sub>3</sub> grinding wheels and cleaned with stainless steel wire brushes.</p> <p>6.10 Before fitting up the weld joint, the profile and dimensions of the weld end preparation shall be checked by the PURCHASER. If the specified tolerances are exceeded, this shall be corrected (with prior approval) by grinding, machining or any other method acceptable to the PURCHASER.</p> <p>6.11 Fit-ups shall be examined by the PURCHASER prior to welding the root pass.</p>		
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<p><b>7.0 <u>TECHNIQUE AND WORKMANSHIP</u></b></p> <p>7.1 Stainless steel welding shall be carried out at a location away from carbon steel welding.</p> <p>7.2 Components to be welded shall be aligned and spaced as per the requirements of the code and WPS.</p> <p>7.3 Alignment and spacing shall be achieved using suitable wires to maintain the gap. These shall be removed after tack welding. The ends to be welded shall be held using suitable clamps, yokes or other devices which will not damage the surfaces in any manner. It shall be ensured that welding operations do not result in distortions.</p> <p>7.4 Earthing shall be provided on the job using earthing clamps of similar material as <sup>ISSUE</sup> the job. Earthing shall not be given through welding rotators.</p> <p>7.5 Tack welds at the root joint, for maintaining joint alignment, shall be made only by qualified welders or welding operators and with filler metal equivalent to that used in the root pass. Tack welds shall be fused with the root pass weld, except that those which have cracked shall be removed. Peening is prohibited on the root and final passes of a weld. The required preheat shall be maintained prior to tack welding. Means shall be made available to measure preheat temperature.</p> <p>7.6 No welding shall be carried out if there is any impingement in the weld area of rain, snow, excessive wind or if the weld area is wet.</p> <p>7.7 Irrespective of the class of steel, root runs shall be made without interruption other than for changing the electrodes or to allow the welder or welding operator to reposition him. Root runs made in the shop may afterwards be allowed to cool by taking suitable precautions to ensure slow cooling e.g. by wrapping in a dry asbestos blanket. Welds made at site shall not be allowed to cool until the thickness of weld metal deposited exceeds one third of the final weld thickness or 10 mm, whichever is greater.</p> <p>7.8 When welding alloy steels, it is strongly recommended that interruption of welding be avoided. Where such interruption is unavoidable, either the preheat shall be maintained during the interruption or the joint shall be post heated or wrapped in dry asbestos blankets to ensure slow cooling. Before recommencing welding, preheat shall be applied again.</p> <p>7.9 Welded-on bridge pieces and temporary attachments shall preferably be avoided. Where approved by the PURCHASER, these may be used. Material of these shall be compatible with material with which they are temporarily welded. All such pieces shall be removed after welding of joints and the weld area ground flush. These areas shall be subjected to MT and PT examination. These pieces shall be welded by qualified welders and welding operators and with electrodes compatible with the parent material. The preheating</p>		
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<p>requirements of material shall be applied and maintained during the welding of attachments. These temporary attachments shall be removed by grinding, chipping, sawing or by arc or flame gouging. When arc or flame gouging is used, at least three (3) mm of metal shall be left around the surface which shall be removed by grinding. This metal shall not be removed by hammering or by use of force.</p> <p>7.10 The arc shall be struck only on those parts of parent metal where weld metal is to be deposited. When inadvertent arc-strikes are made on the base metal surfaces outside the joint groove, the arc-strikes shall be removed by grinding and shall be examined by MT and PT procedures.</p> <p>7.11 Oxides shall not be permitted to form during welding or heat treatment or both, on the internal surfaces which will not be subsequently cleaned. Inert gas purging is an acceptable method to prevent such oxidation. All joints in materials which contain more than 1¼ % chromium shall be purged to assure that less than 1% of oxygen is present on the joint underside before initiation of the welding. The purging operation shall be maintained for a minimum of two (2) passes.</p> <p>7.12 Argon gas used in GTAW process for shielding and purging shall be at least 99.95% pure. Purging shall be carried out at a flow rate depending on diameter until at least five (5) times the volume between dams is displaced. In no case shall the initial purging period be less than 10 minutes. After initial purging, the flow of the backing gas shall be reduced to a point where only a slight positive pressure prevails. Any dams used in purging shall be fully identified and removed after welding and accounted for in order to avoid leaving them in the system. The rate of flow for shielding purposes shall be established in the procedure qualification.</p> <p>7.13 Thorough check shall be exercised to maintain the required inter-pass temperature.</p> <p>7.14 All equipment necessary to carry out the welding, for supporting of the work, for preheating and PWHT including thermal insulation for retaining the heat and for the protection of the welder and welding operator shall be provided by the CONTRACTOR at no extra cost. All necessary precautions shall be taken during cutting and welding operations. It shall be ensured that proper ventilation is available in the welding area and adequate protective gear such as goggles, masks, gloves, protection for the ears and body are used at all times. For guidelines refer ASME standard Z49.1, "Safety in Welding and Cutting".</p> <p>7.15 After deposition, each layer of weld metal shall be cleaned with a wire brush to remove all slag, scale and defects, to prepare for the proper deposition of the next layer. The material of wire brush shall be compatible with parent material. Stainless steel materials shall be cleaned with grinding wheels or stainless steel brushes which have not been used on other materials. Either aluminium oxide or silicon carbide grinding wheels shall be used. Special care shall be taken to secure complete and thorough penetration of the fusion zone into the</p>		
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<p>bottom of the weld. It is recommended that the root run be checked by MT or PT procedures for critical equipment.</p> <p>7.16 If specified, upon completion of welding, the joints shall be wrapped in dry asbestos blankets to ensure slow cooling, unless PWHT is applied immediately.</p> <p>7.17 No welding or welded parts shall be painted, plated, galvanised or heat treated until inspected and approved by the PURCHASER. Welds shall be prepared and ground in such a way that the weld surfaces merge smoothly into the base metal surface, particularly for welds which are to undergo NDE.</p> <p>7.18 Except where necessary to grind flush for NDE, reinforcement for butt welds may be provided. The height of such reinforcement shall meet the requirements of the code. The reinforcement shall be crowned at the centre and tapered on each side of the joined members. The exposed surface of the weld shall be ground where required to present a workmanlike appearance and shall be free from depressions below the surface of the joined members. The exposed surface of the butt welds shall be free from undercuts, overlaps or abrupt ridges or valleys and shall merge smoothly into the surface at the weld toe.</p> <p>7.19 Repair of weld metal defects shall meet the requirements of the code.</p> <p>7.20 Any weld repair shall be subject to the approval of the PURCHASER.</p> <p>7.21 In the event of several unsuccessful repair attempts or if the PURCHASER feels that a satisfactory repair is not feasible, the joint shall be completely remade.</p> <p>7.22 It is preferable to use welding rectifier or DC generator for welding of austenitic steels and while using low hydrogen electrodes.</p> <p>7.23 <u>IDENTIFICATION OF WELDS</u></p> <p>Wherever code symbol stamps are required on carbon steel and ferritic alloy steel they shall be applied directly on to the member with low stress dotted design metal die stamps or to a small stainless steel plate especially provided for such marks. These plates shall be lightly tack welded using electrodes, of diameter three (3) mm or less, of the type specified for the material. Before making the required tack weld, the material in the immediate surrounding area shall be preheated, as required, by electric means or propane or natural gas burners. Cooling shall take place under asbestos insulation in a draft-free area. Stress relieving of these welds is not required. Steel stamping directly on the surface of alloy steel with other than low stress die stamps shall not be used.</p> <p>7.24 <u>SEAL WELDS</u></p> <p>7.24.1 Seal welding shall be carried out by qualified welders and welding operators and in accordance with approved drawings.</p>		
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<p>7.24.2 Threaded joints that are to be seal welded shall be made without the use of thread lubricating compound. Seal weld shall cover all exposed threads.</p> <p>7.25 <u>WELD ENCROACHMENT AND MINIMUM DISTANCE BETWEEN WELDS</u></p> <p>7.25.1 Welded joints, more specifically longitudinal welds, shall be placed not closer than 50 mm to opening or branch welds, reinforcements, attachment devices or from supports etc. In case of deviation, the PURCHASER may specify additional NDE.</p> <p>7.25.2 The longitudinal welds of two adjacent components shall be staggered by at least 30°. The minimum distance between welds shall be 50 mm or three (3) times the wall thickness, whichever is greater. Intersection of welds shall be avoided as far as possible. If such welds are present, they shall be subject to suitable NDE at the discretion of the PURCHASER.</p> <p><b>8.0 <u>PREHEATING</u></b></p> <p>8.1 Preheating prior to tack welding, welding and thermal cutting shall be used as a means of crack prevention and improving weld reliability. The general requirements of PWHT also apply to preheating.</p> <p>8.2 Preheating shall be used as per the recommendations of ASME BPV Code Section VIII Division 1. For equipment under the purview of IBR, the requirements of IBR shall govern. Preheating of austenitic stainless steels is not required, except at low ambient temperatures, in which case a minimum preheat temperature of 10°C is recommended. Table 2 gives the requirements of preheating for commonly used materials.</p> <p>8.3 The preheating zone shall extend 75 mm or a distance equal to four (4) times the material thickness, whichever is greater, beyond the edge of the weld.</p> <p>8.4 The preheat temperature shall be measured at least 75 mm away from the weld preparation.</p> <p>8.5 Where preheating is specified, welding shall continue without interruption. In case interruption cannot be avoided, preheating shall be carried out before re-commencement of welding.</p> <p>8.6 Oxy-acetylene preheating shall not be applied.</p> <p>8.7 For preheating, fuel gas/air torches, burner systems (high velocity gas or oil burners) or electrical heating may be used either locally or in a furnace. For preheating above 250°C, electric heating (resistance or inductive heating) is recommended.</p> <p>8.8 Approved temperature - indicating crayons, thermocouples or digital contact or laser pyrometers shall be used to measure preheat and inter-pass temperatures. A calibration report of the pyrometers and</p>		
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<p>thermocouples shall be available.</p> <p>8.9 When the preheat temperature is 150°C or higher, the metal shall be maintained at or above the preheat temperature until the weld is completed.</p> <p>8.10 The welding of groove welds in low alloy steels of P-3 to P-5 groups with wall thickness of 19 mm or greater may only be interrupted, provided at least 10 mm of weld metal is deposited, or 25% of the welding groove is filled, whichever is greater. If the welding is interrupted prior to the above, the weld area shall be adequately covered with insulating material to ensure slow cooling. After cooling and before welding is resumed, visual examination of the weld shall be performed to assure that no cracks are formed. Required preheat shall be applied before welding is resumed.</p> <p><b>9.0 <u>POSTWELD HEAT TREATMENT</u></b></p> <p>PWHT shall meet the requirements of ASME BPV Code Section VIII Division 1. Table 3 summarises the PWHT requirements for commonly used materials. For equipment under the purview of IBR, PWHT shall be as per IBR.</p> <p><b>9.1 <u>GENERAL REQUIREMENTS</u></b></p> <p>9.1.1 A complete automatic temperature recording shall be made of preheating and stress relieving operations. Where propane gas burners or electrical resistance coils are employed, a complete temperature record of the preheating and stress relieving operation shall be made by means of a box type potentiometer. Other means of recording temperatures are permissible subject to the PURCHASER's approval.</p> <p>9.1.2 Stress relief may be local or full furnace. Local stress relief shall be performed with electric induction or electric resistance coils. Suitable gas burning equipment using natural gas or propane may be employed.</p> <p>9.1.3 At no time during a stress relieving/preheating cycle shall any water or liquid cooling medium be employed.</p> <p>9.1.4 Where members being joined are unequal in thickness, the dimension of the heavier section shall govern the selection of width of the heated band and the duration of the holding period shall be based on maximum weld thickness.</p> <p>9.1.5 For local stress relief, using electrical methods, a minimum of two (2) thermocouples tack-welded to the surface and potentiometers shall be used on the part under at least four (4) layers of asbestos paper. The hot junctions of the thermocouples shall be located on either side of the joint at least 12 mm from the edge of the joint but no further away than 100 mm. When employing induction heating, at least six (6) turns of induction cable shall be used on each side of the weld.</p>		
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<p>Induction coils shall be wrapped on top of the asbestos paper protecting the thermocouples with the first turn approximately 150 mm from the centre of the weld.</p> <p>9.1.6 Local stress relief using gas torches or ring burners may be employed. However, the procedure shall be limited to small items and shall be approved by the PURCHASER.</p> <p>9.1.7 The stress relieving temperature shall be maintained for a period of time proportioned on the basis of one (1) hour per 25 mm of weld thickness at the joint, but in no case less than one (1) hour.</p> <p>9.1.8 For piping joints and socket welded joints, pads, bosses, branch welds and couplings, one (1) thermocouple shall be positioned at a minimum distance of two (2) pipe wall thicknesses from the weld.</p> <p>9.1.9 Equipment on both sides of any joint shall be adequately supported throughout the preheating, welding and stress relieving operations to prevent distortion.</p> <p>9.1.10 All heating and cooling rates shall be maintained as per ASME BPV Code and time-temperature charts from the recorder shall be made available for review and acceptance.</p> <p>9.1.11 The CONTRACTOR shall submit a detailed written procedure for the PWHT for the approval of the PURCHASER.</p> <p>9.2 <u>CARBON STEEL</u></p> <p>9.2.1 Welded joints in carbon steel shall be stress relieved, upon completion of the welding operation, in accordance with Table 3.</p> <p>9.2.2 When local stress relief is employed, the welded joint shall be heated to a temperature of not less than 600°C. The temperature level shall be maintained between 600 and 650°C, one (1) hour per 25 mm of weld thickness but in no case less than one (1) hour. The weld area shall then be allowed to cool undisturbed in still air to a temperature not exceeding 315°C.</p> <p>9.2.3 <u>Heating and Cooling</u></p> <p>Carbon steels, after having reached their specific stress relief temperatures, may be cooled in the furnace or under wraps, i.e., leaving the induction coils or resistance heaters and insulation in place. This means that, at the stress relief temperatures, the power to the furnace or heating coils may be shut off and cooling takes place in the furnace or with all insulation and coils remaining on the part. For furnace stress relief, the doors of the furnace may be opened after the power is shut off, at or below 315°C. Thermocouples controlling the temperatures shall remain during the cooling cycle so that excessive cooling, if it occurs, can be observed and immediately corrected. The stress relieving coils and insulation shall only be removed after the part has cooled to below 315°C or if stress relieved</p>		
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<p>in a furnace the part may be removed from the furnace and permitted to cool in still air at a temperature not below 10°C.</p> <p>9.3 <u>ALLOY STEEL</u></p> <p>9.3.1 Welds in alloy steel shall be stress relieved after the welding operation in accordance with Table 3. After welding, the material shall be wrapped in asbestos and allowed to cool slowly if PWHT is not carried out immediately.</p> <p>9.3.2 For full furnace stress relief of a welded assembly, the entire fabricated section shall be heated uniformly to the temperature specified. The temperature shall be maintained for a period of time proportioned on the basis of one (1) hour per 25 mm of weld thickness of the piece having the greatest weld thickness in the furnace charge, but in no case, less than one (1) hour.</p> <p>10.0 <u>ELECTRODES</u></p> <p>10.1 The specification and size of the electrodes, voltages and amperages, thickness of beads and number of passes shall be as specified in the approved welding procedure or otherwise agreed in writing. Only basic coated electrodes shall be used, which will deposit weld metal having the same or higher physical properties and similar chemical composition to the members being joined. For each batch of approved brand, certificate showing compliance with the specification shall be submitted to the PURCHASER for review before being released for use. All electrodes shall be purchased in sealed containers and stored properly to prevent deterioration. As welding electrodes deteriorate under adverse conditions of storage leading to dampness in the electrode coating, they shall normally be stored in dehumidified air-conditioned rooms or in hot boxes or ovens in their original sealed containers whose temperatures shall be maintained within specified limits. The condition of electrodes shall be frequently inspected. Electrodes with damage to coating shall not be used. Electrodes shall remain <small>ISSUE</small> identified until consumed. It is preferable to procure low hydrogen electrodes in hermetically sealed containers and preserve them without damage to the containers.</p> <p>10.2 All low hydrogen electrodes, after baking as per the manufacturer's recommendations, shall be stored in ovens kept at 80 to 100°C before being used. Recommendations of the electrode manufacturer shall be strictly followed. Until the electrodes are taken out for welding, they shall be stored in portable ovens. The electrodes shall not be exposed to open atmosphere.</p> <p>10.3 For welding of all grades of steel and alloys by the GTAW process, a 2% thoriated tungsten electrode conforming to SFA-5.12-86 EWTh-2 (AWS-A5.12-80, EWTh-2) classification shall be used.</p> <p>10.4 All electrodes to be used on alloy and carbon steel shall conform to ASME BPV Code Section II Part C or any other equivalent code.</p>		
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<p>10.5 The type of electrodes used shall be only those recommended by the manufacturer for the use in the position in which the welds are to be made.</p> <p>10.6 Current and polarity shall be maintained as recommended by the electrode manufacturer.</p> <p><b>11.0 INSPECTION AND TESTING</b></p> <p>11.1 The PURCHASER shall have free access to inspect welding or any other related operations at any time and at any stage of fabrication.</p> <p>11.2 The PURCHASER may require NDE of any weld for reasons other than those given in the specification. The responsibility for the cost of such testing shall be mutually decided between the PURCHASER and the CONTRACTOR.</p> <p>11.3 The CONTRACTOR shall inform the PURCHASER when the weld preparation and set-up for welding of various members selected by the PURCHASER are in progress so that the PURCHASER can inspect the assembly before welding starts.</p> <p>11.4 The responsibilities of the PURCHASER's representative shall in no way reduce the CONTRACTOR's responsibilities to ensure that the work is carried out in accordance with the specification.</p> <p>11.5 Any examination by NDE methods shall be performed before or after PWHT based on the applicable code requirements.</p> <p>11.6 For a welded branch connection and for any weld, necessary repairs and NDE shall be completed before any reinforcing pad is added.</p> <p><b>12.0 EXAMINATION OF WELDS</b></p> <p>12.1 Examination refers to the quality control functions performed by the VENDOR / CONTRACTOR during fabrication, erection and testing.</p> <p>1) As a minimum, the following shall be examined by visual examination:</p> <p>(a) Materials and components to ensure that these are as per the specification and are free from defects. If defects are noticed on "free-issue" items, these shall be brought to the notice of the PURCHASER without delay.</p> <p>(b) Joint preparation and cleanliness</p> <p>(c) Fit-up, joint clearance, and internal alignment prior to joining</p> <p>(d) Preheating as applicable</p> <p>(e) Variables specified by the welding procedure, including filler material, position and electrode</p> <p>(f) Condition of the root pass after cleaning - external and where accessible, internal</p> <p>(g) Slag removal and weld condition between passes</p> <p>(h) Appearance of the finished joint and weld dimensions</p> <p>12.3 Acceptance for the visual examination shall be as per ASME BPV</p>		
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	<b>MOBILE LAUNCH PEDESTAL (MLPs)</b>	SHEET 15 OF 17
<p>Code Section VIII Division 1 or IBR as applicable.</p> <p><b>13.0 QUALIFICATION AND CERTIFICATION OF NDE PERSONNEL</b></p> <p>13.1 Approved and documented NDE procedure prepared by level III personnel shall be made available.</p> <p>13.2 The CONTRACTOR's examining personnel shall have training and experience commensurate with the needs of the specified examinations. NDE supervisors/ examiners shall be qualified at level II or above of ASME BPV Code Section V.</p> <p>13.3 The CONTRACTOR shall make available to the PURCHASER copies of certificates of qualification of the examiners he proposes to use for the PURCHASER's approval.</p> <p><b>14.0 METHODS OF EXAMINATION</b></p> <p>The methods of examination used, Ultrasonic (UT), Radiographic (RT), MT and PT shall be in accordance with ASME BPV Code, Section V.</p> <p><b>15.0 ACCEPTANCE STANDARDS</b></p> <p>15.1 Levels of acceptance of defects in welds shall be in accordance with ASME BPV Code Section VIII Division 1.</p> <p>15.2 For equipment under the purview of IBR, the levels of acceptable defects shall be as per IBR.</p> <p><b>16.0 REPAIR WELDING</b></p> <p>16.1 All defects in welds requiring repair shall be removed by flame or arc gouging, grinding, chipping or machining. The major repairs may involve:</p> <p>a. Cutting through the weld</p> <p>b. Cutting out a portion of material containing the weld, or</p> <p>c. Removing the weld metal down to the root depending upon the magnitude of the defects.</p> <p>16.2 After removing the defect, the repaired portion and adjacent area shall be examined by the same NDE methods as specified for the original weld and the same acceptance criteria shall hold good.</p> <p>16.3 All the repair welds shall be made using the same or other specified welding procedures as those used in making the original welds including preheating and stress relieving if originally required.</p>		
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	MOBILE LAUNCH PEDESTAL (MLPs)		SHEET 16 OF 17	

TABLE 1

WELDING SPECIFICATION CHART FOR COMMONLY USED MATERIAL

Sl.no.	Base Material	Welding process		Filler material	
		Root	Filler	Root	Filler
1.0	CARBON STEELS	GTAW	GTAW	ER70S2 OR ER70S3	ER70S2 OR ER70S3
1.1	≤5MM THICK	GTAW OR SMAW	GTAW OR SMAW	ER70S2 OR ER70S3 OR E6010	E6013 F6-EL8 OR E7018 F7-EL12
1.2	>5MM AND <19MM THICK				
1.3	>19MM THICK	GTAW OR SMAW	GTAW OR SMAW	ER70S2 OR ER70S3 OR E6010	E7018 F7-EL12
2.0	LOW ALLOY STEELS	GTAW	GTAW	ER 80S B2	ER 80S B2
2.1	1 ¼ % Cr ½ Mo ≤ 5mm Thick				
2.2	1 ¼ % Cr ½ Mo > 5mm Thick	GTAW	SMAW	ER 80S B2	E 8016 OR E8018-B2
2.3	2 ¼ % Cr 1% Mo >5mm Thick	GTAW	GTAW	ER 90S B3	ER 90S B3
2.4	2 ¼ Cr 1%Mo >5mm thick	GTAW	SMAW	ER 90S B3	E 9015 OR E9016 OR E9018-B3

Note:

1) Low hydrogen electrodes shall be used for critical systems such as chlorine, hydrogen, caustic and similar toxic inflammable fluids and also whenever the wall thickness exceeds 19mm

2) The argon shielding gas flow rate shall not be less than 0.34 M3/Hr

3) For purging and shielding argon gas shall be used. However nitrogen may be used as an alternative to argon for purging purpose only.

4) For fillet welds SMAW may be used instead of GTAW for thickness above 5mm.

5) For GTAW electrode shall be 2% thoriated tungsten.

6) Initial purging prior to welding proves shall be minimum of five times the volume between dams of ten minutes minimum whichever is higher. When welding commences the purge gas flow shall ensure that gas pressure is only marginally higher than atmospheric pressure to ensure no root concavity.

7) Back purging using argon/nitrogen shall be maintained for the root run and minimum of one additional pass.

8) Electrodes and filler wires manufactured by reputed firms duly approved by the PURCHASER shall only be used.

9) Electrodes shall have at least the same or higher physical properties and similar chemical composition to the members only be used.

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MOBILE LAUNCH PEDESTAL (MLPs)

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TABLE-2

PREHEAT REQUIREMENTS

SR.NO.	BASE MATERIAL	NOMINAL WALL THICKNESS MM	SPECIFIED MINIMUM TENSILE STRENGTH MPa	RECOMMENDED MINIMUM PRE-HEAT TEMPERATURE C
1	CARBON STEEL	< 25	490	10
2	CARBON STEEL	>25	490	100
3	LOW ALLOY STEEL 1 ¼ % Cr ½ %Mo	All	All	149
4	LOW ALLOY STEEL 2 ¼ % Cr 1% Mo	All	All	210

TABLE-3

POSTWELD HEAT TREATMENT REQUIREMENTS FOR COMMONLY USED STEEM MATERIALS

Sr.no.	Base Material	NOMINAL WALL THICKNESS MM	METAL TEMPERATURE RANGE °C
1	CARBON STEEL	≤ 32	NONE
2	CARBON STEEL	>32	600 TO 650
3	LOW CARBON STEEL 1 ¼ % Cr ½ %Mo	ALL	600 TO 650
4	LOW ALLOY STEEL 2 ¼ % Cr 1% Mo	ALL	680 TO 700

Notes:

1) In IBR systems, in carbon steels, PWHT is also required, when the carbon percentage exceeds 0.25%, at the temperature range of 600 +/- 20 °C

2) For equipment in carbon steels or alloy steels and meant for lethal service, PWHT of all welds shall be carried out.

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	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 1 OF 2
<p style="text-align: center;"><b><u>PAINTING SPECIFICATION</u></b></p> <p>All the shop-fabricated items shall be sand blasted, primer painted and then transported to site for erection. The site fabrication items also shall be sandblasted and primer painted before erection. After completion of the erection, all the damaged primer painted area shall be rectified. After primer painting, the total surface shall be final painted with sufficient number of coats using air-drying silicone aluminum paint which will be suitable to withstand 600 °C, having a DFT of 40 microns.</p> <p><b>1.0 Preparation of surfaces</b></p> <p>All surfaces to be painted shall be clean, dry and free from oil, grease, dirt, dust, corrosion and weld spatters. Any other surface contaminant except tightly bonded residues of mill scale rust is permissible to a limit of not more than 5% of whole surface and a maximum of 10% on any particular square inch area. Surfaces that may become inaccessible after erection or installation or both, shall be prepared and painted while still accessible as per the same procedure mentioned.</p> <p><b>2.0 Sand Blasting</b></p> <p>The entire surface of all the fabricated materials is to be sand blasted as per near white quality of steel structures painting council (SSPC) standard of SA 2.5 of SIS 055900. The surface profile after blasting shall be between 37-65 microns and should be of jagged in nature. Hand cleaning shall be carried out by chipping and scraping followed by wire brushing/abrasive wheels for items for which surface preparation is difficult by sand blasting after taking approval from purchaser / TPIA. All surfaces shall be degreased using a suitable solvent to remove oil and grease and shall be dried off before painting.</p> <p><b>3.0 Painting scheme</b></p> <p>Immediately after sand blasting, one coat of inorganic zinc silicate primer shall be applied to a dry film thickness (DFT) of 65 microns (minimum). The second coat of same primer paint shall be applied after completion of SDSC SHAR site final assembly and welding works on total MLP surface. The Final coat of 40 microns of air drying silicone aluminium paint suitable to withstand 600 °C shall be given.</p> <p>All paint and primer shall be of standard quality and procured from approved manufacturers as prescribed in the list furnished. The tenderer shall provide the purchaser "Elcometer" / Paint thickness measuring gauges free of charge and shall measure the thickness of paint in the presence of the representative of the purchaser at random locations selected by him.</p> <p>Machine finished surfaces shall be protected against corrosion by a rust inhibiting coating that can be easily removed prior to erection or which has characteristics that make removal unnecessary prior to erection.</p> <p>Second primer coating and final HR painting shall only be done after the structure is erected, leveled, plumbed, aligned and welded/connected in its final position, tested and commissioned. However, touch up painting, making good to any damaged shop painting and completing any unfinished portion of</p>		
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	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 2 OF 2
<p>the shop coat shall be carried out by the Tenderer free of cost. The materials and specification for such painting in the field shall be in accordance with the requirements of the specification for shop painting.</p> <p>Painting shall not be done in frosty or foggy weather or when humidity is such as to cause condensation on the surfaces to be painted. Before painting of steel, which is delivered unpainted, is commenced, all surfaces to be painted shall be dried and thoroughly cleaned from all loose scale and rust.</p> <p>All field rivets, bolts, welds and abrasions to the shop coat shall be spot painted with the same paint used for the shop coat. Where specified, surfaces which will be in contact after site assembling shall receive a coat of paint (in addition to the shop coat, if any) and shall be brought together while the paint is still wet.</p> <p>Bolts and fabricated steel members, which are galvanized or otherwise treated, shall not be painted before completion of final assembly.</p> <p>Paints shall be stored under cover in airtight containers. Paints supplied in sealed containers shall be used up as soon as possible once the container is opened.</p> <p>While painting the new structures, the already finished floors and structures shall not be spoilt. If there is any spillage of paint on the floors or members on the finished structures, the tenderer has to clear and provide the painting to the spoiled areas.</p> <p>Paints supply shall be checked for shelf life to meet the requirements before application. Proper action shall be taken well in advance prior to actual usage.</p> <p><b>4.0 Paint specifications:</b></p> <p>(a) Inorganic Zinc Silicate Primer:</p> <ul style="list-style-type: none"> <li>• Two part, self-cured</li> <li>• Dry temperature resistance to 400 °C</li> <li>• Minimum shelf life of 12 months</li> <li>• Excellent abrasion resistance</li> <li>• Minimum coverage of 9 sq./litre at 65 microns (minimum)</li> <li>• Volume of solids 60% (minimum) by weight and 80% of zinc in dry film by weight</li> <li>• No mud cracking at an applied thickness of 75 microns.</li> </ul> <p>(b) Air drying silicone aluminum paint</p> <ul style="list-style-type: none"> <li>• Temperature resistance up to 600 Deg C continuous</li> <li>• Single component, Self-cured</li> <li>• Resin base: Silicon</li> <li>• Volume of solids 25% (minimum)</li> <li>• Excellent adhesion by cross hatch test</li> <li>• Minimum shelf life 12 months.</li> </ul>		
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QUALITY ASSURANCE PLAN FOR MLP

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY			REMARKS
									VR	TP	IS	
A. MATERIAL (RAW MATERIALS & BOUGHTOUTS)												
1	Rolled plates & sections	a. Appearance	Visual	Major	100%	IS:2062	Freedom from defects like pitting, cracks, etc.	--	H	H	R	
		b. Properties	Chemical analysis & physical test	Major	100%	IS:2062	Drawing specification	Mill test certificates/ Lab reports	H	R	R	
		c. Internal flaws	UT	Critical	100% for plates ≥20mm thick, 10% for sections	ASTM A435	Specification	NDT reports	H	H	R	
2	Fasteners (high tensile bolts & nuts etc.)	a. Quality	Visual	Major	Sample check as per relevant specification	IS:1367	a. No cracks b. Proper matching with nuts	IR	H	W	R	
		b. Chemical composition & physical properties	Chemical analysis, mechanical test	Major	Sample check as per relevant specification	IS:1367	IS:1367 Part III	Manufacturer's test certificates	H	R	R	
		c. Dimensional	Measurements	Major	Sample check as per relevant specification	IS:1367	IS:1367 Part III & XIII		H	W	R	

Legend :

VR – Vendor  
IS – ISRO  
TP – Third Party Inspection Agency  
H – Carrying out responsibility  
R – Review of records & results  
W – Test/inspection to be witnessed

Signature	Signature	Signature	Date :
For VENDOR	For THIRD PARTY	For ISRO	Place :

QUALITY ASSURANCE PLAN FOR MLP

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY			REMARKS
									VR	TP	IS	
B. WELDING PROCEDURE, WELDER'S QUALIFICATION, ETC.												
1	Welding	WPS, Welder's & Welding operator's qualification	Test piece, Visual, Physical & NDT (RT)	Critical	100%	ASME Sec IX	ASME Sec IX	WPS, PQR & WPQ	H	H	R	
C. FABRICATION (MODULES OF MLP, ANCHOR LEG. ETC.)												
1	Setting out / Layout / Marking / CNC	Layout	Measure-ment	Major	100%	Relevant drawings	Full scale layout to be checked before cutting	Shop register	H	W	R	
2	Fitup before welding	Quality	Visual alignment & check of major dimensions	Major	100%	Drawings	a. proper edge preparation b. proper tack welds c. minimum gap for butt joints as per WPS d. DIN-8570	IR	H	H	R	Members requiring site welding shall be match marked at joining ends for site erection
3	Welding (fillet joints)	Profile, fillet size, overall physical appearance	Visual/ gauge, DP/ MPT after final welding	Major	100%	ASME SecVIII, Vol-1	Drawings	IR	H	W	R	10% DP test at random shall be done

Legend :

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Signature	Signature	Signature	Date :
For VENDOR	For THIRD PARTY	For ISRO	Place :



QUALITY ASSURANCE PLAN FOR MLP

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY			REMARKS
									VR	TP	IS	
4	Full penetration welding	a. Root inspection after back gouging b. Internal defects	Visual & LPI	Major	100%	IS:3658	No cracks allowed	IR	H	W	R	
			UT / RT	Critical	Wherever asked in the drawing	ASME Sec-VIII, Vol-1	ASME Sec-VIII, Vol-1	Test report	H	W	R	
		c. Welding quality, surface defects	LPI / MPI	Critical	Wherever asked in the drawing	ASME Sec-VIII, Vol-1	ASME Sec-VIII, Vol-1	Test report	H	H	R	
5	Stress relieving (after complete welding)	T-T curves	T-T curve verification	Major	100%	ASME Sec-VIII, Vol-1	Drawings	T-T graph	H	R	R	
6	Dimensional inspection after welding & stress relieving	Dimensional	Measurement of major dimensions & full size shop layout checking	Major	100%	Drawing / DIN 8570	Drawings	IR	H	H	W	
D. SAND BLASTING & PAINTING												
1	Sand blasting & painting	Paint thickness	Visual & measurement by paint thickness gauge	Major	At random for paint thickness	Drawing & specification	Drawings & specification	IR	H	W	R	
Legend :												
VR – Vendor				Signature		Signature	Signature	Date :				
IS – ISRO												
TP – Third Party Inspection Agency												
H – Carrying out responsibility												
R – Review of records & results												
W – Test/inspection to be witnessed												
				For VENDOR		For THIRD PARTY	For ISRO	Place :				

QUALITY ASSURANCE PLAN FOR MLP

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY			REMARKS
									VR	TP	IS	
E. MACHINING (MODULES OF MLP, ANCHOR LEG)												
1	Machining	Overall dimensions	Measurement & visual	Major	100%	Drawing	Drawing	IR	H	H	R	
2	Drilling, etc.	Drilling & tapping	Measurement of hole size & center distances	Critical	100%	Drawing & DIN 8570	Drawing	IR	H	H	R	
F. ASSEMBLY OF MODULES OF MLP, ANCHOR LEGS AND OTHER SUB-ASSEMBLIES AT SHOP												
1	Control assembly at works	Dimensions, level, alignment, erection of clits with fasteners	Visual & measurement	Critical	100%	Drawing	Drawings	IR	H	H	H	Before dismantling, reference line& match marking to be punched. Welding of erection clits to be ensured.
G. ERECTION AT SITE												
1	Fabricated material inspection	Visual, dimensional, review of TC & IR	Visual & measurement	Major	100%	TS & approved drawings	TS & approved drawings	IR	H	R	R	
2	Welding & welder qualification	WPS, Welder's & Welding operator's qualification	Test piece, Visual, Physical & NDT (RT)	Critical	100%	ASME Sec IX	ASME Sec IX	WPS, PQR & WPQ	H	W	R	
Legend :												
VR – Vendor				Signature		Signature	Signature	Date :				
IS – ISRO												
TP – Third Party Inspection Agency												
H – Carrying out responsibility												
R – Review of records & results												
W – Test/inspection to be witnessed												
				For VENDOR		For THIRD PARTY	For ISRO	Place :				

PIF-MLP-001/2018		TATA CONSULTING ENGINEERS LIMITED				SECTION: E1					
		QUALITY ASSURANCE PLAN (QAP) FOR MLP				SHEET : 5 OF 4					
QUALITY ASSURANCE PLAN FOR MLP											
SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY		REMARKS
								IR	VR	TP	IS
3	Positioning & alignment of anchor legs, Modules	Position, level, span, diagonal, height and other dimensions	Measurement & visual	Major	100%	Drawing	Drawing		H	H	H
4	Welding	Preheat / interpass / sequence of welding	Visual	Major	100%	Drawing & TS	Drawing & TS	IR	H	H	H
5	Stress relieving	T-T curves	T-T curves, charts	Critical	100%	Drawing & TS	Drawing & TS	IR	H	H	H
6	Complete welding	Visual, DPT, UT	Visual & UT	Major	100%	TS & drawings	TS & drawings	IR	H	H	H
7	Dimensional check of whole assembly	Position, level, span, diagonal, height and all dimensions	Measurement & Visual	Major	100%	Drawings	Drawings	IR	H	H	H
10	Assembly of MLP with bogie	Interfaces & Clearances	Visual & measurement	Major	100%	TS & drawings	TS & drawings	IR	H	H	H
11	MLP movement with bogie	Clearances	Visual & measurement	Major	100%	TS & drawings	TS & drawings	IR	H	H	H
<div>Legend :</div> <div>VR – Vendor</div> <div>IS – ISRO</div> <div>TP – Third Party Inspection Agency</div> <div>H – Carrying out responsibility</div> <div>R – Review of records &amp; results</div> <div>W – Test/Inspection to be witnessed</div> <div>Signature</div> <div>Signature</div> <div>Date :</div> <div>For VENDOR</div> <div>For THIRD PARTY</div> <div>For ISRO</div> <div>Place :</div>											

PIF-MLP-001/2018		TATA CONSULTING ENGINEERS LIMITED		SECTION: E2			
		MOBILE LAUNCH PEDESTAL		SHEET 1 OF 7			
BILL OF MATERIALS							
DETAILS OF FABRICATED COMPONENTS							
Material Quantities mentioned in the following Table is for different plate thickness for each MOBILE LAUNCH PEDESTAL							
SI No.	DESCRIPTION OF COMPONENT	QTY	OVERALL DIMENSIONS (mm)	PART NO.	MATERIAL	APPROX. WEIGHT	HEAT TREATMENT / REMARKS
1.0	MLP ANCHOR LEG	4					
1.1	LEG VERTICAL PLATES		120 Thk. Plate for Four legs 2065 x 600 x 120 thk – 8 nos 2065 x 760 x 120 thk – 8 nos		Mild Steel E 250-BR; IS:2062	21831 kg	
1.2	Leg base Plate		35 Thk. Plate for Four legs 1320 x 920 x 35 thk – 4 nos		Mild Steel E 250-BR; IS:2062	1322 kg	
1.3	Leg inside Plate		50 Thk. Plate for Four legs 760 x 360 x 50 thk – 4 nos		Mild Steel E 250-BR; IS:2062	663 kg	
1.4	Leg Intermediate Horizontal Plate		32 Thk. Plate for Four legs 1230 x 830 x 32 thk – 8 nos 1230 x 830 x 16 thk – 4 nos		Mild Steel E 250-BR; IS:2062	1495 kg	
2.0	MLP BASE STRUCTURE(PEDESTAL DECK)	1					
2.1	Outer plates of Deck		25 Thk. Plate 10000 x 3400 x 25 thk – 2 nos (with suitable Walk way openings) 10000 x 3400 x 25 thk – 2 nos 2015 x 10000 x 25 thk – 4 nos		Mild Steel E 250-BR; IS:2062	60682 kg	

PIF-MLP-001/2018		TATA CONSULTING ENGINEERS LIMITED				SECTION: E2	
		MOBILE LAUNCH PEDESTAL				SHEET 2 OF 7	
SI No.	DESCRIPTION OF COMPONENT	QTY	OVERALL DIMENSIONS (mm)	PART NO.	MATERIAL	APPROX. WEIGHT	HEAT TREATMENT / REMARKS
			5970 x 2015 x 25 thk – 4 nos 5970 x 3400 x 25 thk – 4 nos				
2.2	Deck Inside Vertical and Horizontal stiffening plates		20 Thk. Plate with suitable walkway cut-outs. 10000 x 3400 x 20 thk – 4 nos 2000 x 3400 x 20 thk – 8 nos		Mild Steel E 250-BR; IS:2062	19685 kg	
2.3	Deck Inside Vertical and Horizontal stiffening plates		16 Thk. Plate 2000 x 3400 x 16 thk – 20 nos (with suitable walkway cut-outs.) 75 mm Flat x 16 thk (18.061x10*6 mm2)		Mild Steel E 250-BR; IS:2062	16794 kg	
2.4	Walkway Plate of Bottom Deck		6 Thk. chequered Plate		Mild Steel E 250-BR; IS:2062	1228 kg	
	Cover Plate at top of pedestal deck.		6 Thk. chequered Plate		Mild Steel E 250-BR; IS:2062	820 kg	
2.5	Vertical Stiffening Plates inside MLP and on top of Anchor Leg		36 Thk. Plate 10000 x 660 x 36 thk – 4 nos		Mild Steel E 250-BR; IS:2062	7251 kg	
2.6	Bogie interface plate		80 Thk. Plate 1340 x 1150 x 80 thk – 4 nos		Mild Steel E 250-BR; IS:2062	3843 kg	
2.7	Weight of Hand rails and Ladder		All around Hand rail on MLP top deck and approach		Mild Steel E 250-BR; IS:2062	600 kg	

PIF-MLP-001/2018		TATA CONSULTING ENGINEERS LIMITED				SECTION: E2	
		MOBILE LAUNCH PEDESTAL				SHEET 3 OF 7	
SI No.	DESCRIPTION OF COMPONENT	QTY	OVERALL DIMENSIONS (mm)	PART NO.	MATERIAL	APPROX. WEIGHT	HEAT TREATMENT / REMARKS
			ladder.				
3.0	MLP Central Annular Structure and Taper Girder	1					
3.1	Taper Box Girder and CAS structure		25 Thk. Girder Plates 1800 x 910 x 25 thk – 8 nos 1268 x 3375 x 25 thk – 8 nos 340 x 2721 x 25 thk – 8 nos 1150 x 3375 x 25 thk – 8 nos 850 x 2721 x 25 thk – 8 nos		Mild Steel E 250-BR; IS:2062	16717 kg	
3.2	25 Thk. Plates at box girder and Deck interface.		25 Thk. Plates at box girder and Deck interface. 1500 x 3400 x 25 thk – 4 nos 1300 x 3400 x 25 thk – 4 nos (With suitable opening of 1200 x 600 in each plate)		Grade E250, Quality BR as per IS:2062	6292 kg	
3.3	Box Girder bottom plates		1430 x 1050 x 32 thk – 4 nos 1415 x 910 x 32 thk – 4 nos 650 x 600 x 32 thk – 4 nos 520 x 520 x 32 thk – 4 nos			2329 kg	
3.4	25 Thk. Cylindrical Plates and conical plate		25 Thk. Cylindrical Plates I.D. 2900 x 4160(L) x 25 thk I.D. 3550 x 2720(L) x 25 thk I.D. 3150 x 490(L) x 25 thk		Mild Steel E 250-BR; IS:2062	15975 kg	

PIF-MLP-001/2018		TATA CONSULTING ENGINEERS LIMITED				SECTION: E2	
		MOBILE LAUNCH PEDESTAL				SHEET 4 OF 7	
SI No.	DESCRIPTION OF COMPONENT	QTY	OVERALL DIMENSIONS (mm)	PART NO.	MATERIAL	APPROX. WEIGHT	HEAT TREATMENT / REMARKS
			(With suitable cut outs for jet flow)  Cone: I.D. 3550 at bottom and I.D. 3150 at top 665 slanting height				
3.5	Vertical stiffening plates inside CAS		Vertical stiffening plates: 2700 x 314 x 25 thk – 32 nos  Vertical stiffening plates inside conical region: 610 x 312 x 25 thk – 24 nos  Vertical stiffening plates above conical region: 565 x 110 x 25 thk – 16 nos  Vertical stiffening plates above conical region: 265 x 110 x 25 thk – 24 nos		Mild Steel E 250-BR; IS:2062	8181 kg	
3.6	Horizontal circular CAS plates	1	<b>Circular Plates:</b> I.I.D. 2950 and O.D. 3550 32 thk – 3 nos I.D. 2900 and O.D. 3200 32 thk – 1 nos		Mild Steel E 250-BR; IS:2062	2916 kg	

PIF-MLP-001/2018		TATA CONSULTING ENGINEERS LIMITED				SECTION: E2	
		MOBILE LAUNCH PEDESTAL				SHEET 5 OF 7	
SI No.	DESCRIPTION OF COMPONENT	QTY	OVERALL DIMENSIONS (mm)	PART NO.	MATERIAL	APPROX. WEIGHT	HEAT TREATMENT / REMARKS
3.7	Replaceable ring		20 Thk. Plates 230 x 200 x 20 thk – 72 nos  Cylindrical plate: I.D. 2980 x 230(L) x 20 thk		Mild Steel E 250-BR; IS:2062	1042 kg	
3.8	Replaceable ring interface at CAS		25 and 32 Thk plate Circular Plates: O.D. 3200 and I.D. 2800 25 thk – 1 nos O.D. 3200 and I.D. 2800 32 thk – 1 nos		Mild Steel E 250-BR; IS:2062	844 kg	
3.9	Replaceable ring top		40 Thk. Plate Circular Plate: O.D. 3200 and I.D. 2800 40 thk – 1 nos		Mild Steel E 250-BR; IS:2062	592 kg	
4.0	Pulley Block and bearing plate	1					
4.1	Bracket		For 4 nos of Anchor Leg			193 kg	
4.2	Track		For 4 nos of Anchor Leg		STEEL 45C8 IS:1570	552 kg	
4.3	Track holder		For 4 nos of Anchor Leg		IS 2062 Fe410WB	144 kg	
4.4	10 Thk plate for holding 35 thk bearing plate		For 4 nos of Anchor Leg		IS 2062 Fe410WB	200 kg	





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		MOBILE LAUNCH PEDESTALS (MLP <sub>s</sub> )		SHEET 2 OF 2	

  

**Schedule of Price**

Sr. no.	Item	Unit	Qty.	Unit Cost (in Rs)	Total Cost	GST (%)	GST (In Rs.)	Total Cost (in Rs.)
1	Procurement, supply of material, manufacture, control assembly, testing and inspection at contractor's works, packing, forwarding, transportation, delivery, handling & storage at purchaser site with fabricated structural steel / Mild steel conforming to IS:2062 & IS:808 as per specifications enclosed with tender	t	489					
2	Procurement, supply of material, manufacture, control assembly, testing and inspection at contractor's works, packing, forwarding, transportation, delivery at site with handling & storage at purchaser site with fabricated structural steel / Mild steel conforming to IS:2062 & IS:808 with normal machining as per specifications enclosed with tender	t	78					
3	Procurement, supply of material, manufacture, control assembly, testing and inspection at contractor's works, packing, forwarding, transportation, delivery at site with handling & storage at purchaser site with fabricated structural steel / Mild steel conforming to IS:2062 & IS:808 with heavy surface machining as per specifications enclosed with tender	t	18					

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PIF-MLP-001/2018		PSLV INTEGRATION FACILITIES (PIF)		SECTION: F1	
		MOBILE LAUNCH PEDESTALS (MLP <sub>s</sub> )		SHEET 3 OF 2	

  

4	Erection and commissioning of mobile launch pedestals including storage / handling at site, erection, testing, commissioning and carrying out performance test as per specification enclosed with tender.	t	585					
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PIF-MLP-001/2018	<b>PSLV INTEGRATION FACILITIES (PIF)</b>	SECTION: F2
	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 1 OF 2
<p><b>1. PRE-QUALIFICATION CRITERIA</b></p> <p>Bidders shall meet the following pre-qualification criteria. Offer of the bidders which are not meeting the following criteria will not be considered for evaluation.</p> <p><b>A. Technical Qualification Requirements</b></p> <p>The bidder shall meet the following technical qualifying requirements and shall submit relevant certificates to establish his credentials.</p> <ol style="list-style-type: none"> <li>Bidder shall be an organization with long experience (more than Five years) in having executed contracts for manufacture, supply, erection, testing and commissioning of heavy structural works using structural built-up sections.</li> <li>The firm shall have successfully completed Manufacture, Installation, testing and commissioning of heavy structural works of the order during last 5 years ending with 31.03.2018.</li> </ol> <p style="padding-left: 40px;"> <b>One Heavy structural work of 450t</b>  or  <b>Two heavy structural works of 350 t</b>  or  <b>Three heavy structural works of 230 t</b> </p> <p>Bidders have to provide relevant certificates along with the Techno-Commercial Bid.</p> <ol style="list-style-type: none"> <li>The firm shall have facilities for fabrication and handling big structural items of at least 10m long and 10m wide for fitment, alignment, welding, etc.</li> <li>The firm should have successfully completed manufacture and establishment of high structures to the satisfaction of any of the reputed third party inspection agencies like M/s. MECON, M/s. M N Dastur, M/s. Lloyds, M/s. TCE, etc.</li> </ol> <p><b>B. Financial Qualification Requirements</b></p> <ol style="list-style-type: none"> <li>The Bidder's annual financial turnover shall be not less than Rs 1360 Lakhs per year during last three Financial years ending with 31.03.2017</li> <li>During Last 5 Years ending 31.03.2018, the bidders should have successfully completed either of the following:</li> </ol> <p style="padding-left: 40px;"> One similar completed work of heavy fabrication work not less than Rs. 870 lakhs  or </p>		
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PIF-MLP-001/2018	<b>PSLV INTEGRATION FACILITIES (PIF)</b>	SECTION: F2
	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 2 OF 2
<p>Two similar completed works of heavy fabrication work with each not less than Rs. 650 lakhs</p> <p>or</p> <p>Three similar completed works of heavy fabrication work with each not less than Rs. 430 lakhs</p> <ol style="list-style-type: none"> <li>Latest Solvency certificate from a scheduled bank for Rs 430 lakhs or above.</li> </ol> <p><b>C. Documents to be submitted along with the bid submission</b></p> <ol style="list-style-type: none"> <li>Firm establishment certificate and nature of work.</li> <li>Details of work similar type completed during the last five years ending with 31.03.2018. (for Sl. Nos.2&amp; 3 of A)</li> <li>Satisfactory work completion certificates from the clients, with the work order copies (for Sl. Nos.2&amp; 3 of A)</li> <li>The Bidders should have PAN, GST Registration No.</li> <li>The Bidders shall submit Profit &amp; Loss Accounts, Balance Sheets duly Certified by the auditor and IT returns for the last three financial years with acknowledgement from IT Department up to last 3 years. Necessary documents shall be submitted.</li> <li>IT/ TDS certificate shall be submitted for last three years.</li> <li>Structure and Organization chart.</li> <li>List if personnel with qualification &amp; experience in the firm in the areas of design, production, quality, safety, administration etc.,</li> <li>List of Machinery &amp; Equipment's to be used for the work</li> </ol> <p><b>D. Bid Selection Procedure and Process of Pre –Qualification</b></p> <ol style="list-style-type: none"> <li>Short listing based on documents submitted, satisfying the all eligibility criteria given above by the firm or individual along with their Bid / application. (Non – submission of any document as given in above list within stipulated time leads to rejection of Bid).</li> <li>Subsequently Bidder's competency, their technical achievements and financial status will be evaluated suitable for this project. Feedbacks from Bidder's clients will be verified.</li> <li>Visit to sites by technical team (ISRO or Third party) where Bidder has established above mentioned works.</li> <li>If required, visit will be made to their factory/ firm by technical team (ISRO or third party) for accessing the capability of manufacturer.</li> </ol>		
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PIF-MLP-001/2018	<b>PSLV INTEGRATION FACILITIES (PIF)</b>	SECTION: F2
	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 3 OF 2
<p>5. Scrutiny of all technical specification and supply conditions mentioned in techno-commercial bid.</p>		
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	<b>MOBILE LAUNCH PDESTALS (MLPs)</b>	SHEET 1 OF 2
<b>SCHEDULE OF GENERAL PARTICULARS / VENDOR EVALUATION FORMAT</b>		
<b>S.n</b>	<b>Name of the Bidder / Manufacturer</b>	:
1	Address of the Bidder / Manufacturer	:
2	Type of Company Proprietary/Pvt.Ltd/Public Ltd/Joint Venture)	
3	Registration number	
4	Year of inception of the company	
5	Registered address	
6	Name & address of the office of the Chief Executive of the company	
7	Name & Designation of the officer of the Bidder to whom all correspondence shall be made for expeditious technical/ commercial co-ordination.	
8	Telephone number Fax number E-mail address	
9	Locations of the Branches of Company (if any)	
10	Annual turn-over of the company for the last three years	
11	IT returns for the last 3 years	
12	Major customers (Enclose copies of the Purchase Orders)	
13	Any customers feedback on the services which is in writing (Pl. enclose copies)	
14	Quality certification of the company	
15	PAN Card Copy	
16	The Profit & Loss Account details for the last 3 years which is duly audited and Submitted as part of the Annual Report	
17	Orders executed during last three years, > 200 T or > Rs. 5 crores, references are is to be mentioned. (Separate sheet can be attached).	
18	Shop floor area covered	
19	No. of employees (Supplier shall mention contract personnel separately) Engineers Supervisors Technicians Quality control engineers Administrative Staff.	
20	Handling facility available: Over head / Gantry Crane details (Capacity , span lift). Mobile Cranes.	
21	Load testing facility Available: Maximum weight available. No. of weights Total test load available.	
22	Welding / fabrication workshop (Type / capacity / quantity of machines shall be provided) MMAW machines GMAW machines Gas cutting machines Plasma cutting machines Welding Fixtures	
23	No. of Welders (MMAW), Qualification details, No. of Welders (GMAW), Qualification details, No. of Welders (TIG), Qualification details,	
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PIF-MLP-001/2018	<b>PSLV INTEGRATION FACILITIES (PIF)</b>	SECTION: F3
	<b>MOBILE LAUNCH PDESTALS (MLPs)</b>	SHEET 2 OF 2

	Welders Qualified by:		
24	Details of welding Inspection Equipment & Welding inspector available with supplier (LPT, UT, MPT, Xray, etc)		
25	Forming facilities available ( with brief specification of each machine Shearing Machine Cutting Machine Cutting Machine Bending Machine		
26	Machining Facilities available ( with brief specification of each machine) Turning lathe (Conventional /CNC) Milling Machine (Conventional / CNC) Gear Cutting / Hobbing Machines Drilling Machines (conventional / CNC) Cylindrical Grinding Machine ( Conventional / CNC) Any other machines		
27	Details of inspection facilities / Instruments available ( Brief description & specifications shall be provided)		
28	If third party Inspection Services are taken for fabricating similar works give details.		
29	Design Software's available Drafting & modeling software packages FEM software Other softwares Design Engineers ( with qualification & experience		
30	Bid validity period (Min. 4 months from date of bid opening)		
31	COMPLETION SCHEDULE		

SIGNATURE :

NAME :

DESIGNATION :

COMPANY :

DATE :

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PIF-MLP-001/2018	<b>PSLV INTEGRATION FACILITIES (PIF)</b>	SECTION: F4
	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 1 OF 1

  

**CONFIRMATION OF ACHIEVING ACCURACY**

The BIDDER shall furnish performance guarantees as listed below based on the data specified in section B:

1. Top vehicle mounting surface accuracy for CAS in combination with interface ring shall be less than 30 arc second
2. The maximum absolute value of deflection on top of CAS shall be less than 1.5 mm

  

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PIF-MLP-001/2018	<b>PSLV INTEGRATION FACILITIES (PIF)</b>	SECTION: F5
	<b>MOBILE LAUNCH PEDESTALS(MLPs)</b>	SHEET 1 OF 1

  

**EXCEPTIONS AND DEVIATIONS**

In line with Proposal Document, Bidder may stipulate Exceptions and deviations to the Proposed conditions if considered unavoidable.

Sl.no	Reference in Specification	Dept. Specification	Offered specification	Deviation

**NOTE:**

- Only deviations are to be written in the above form.
- Any deviations taken by the Bidder to the stipulations of the Proposal document shall be brought out strictly as per this format and enclosed along with the bid.
- Any deviations not brought out in this Proforma and written elsewhere in the Proposal document shall not be recognized and the same is treated as null and void.
- Any wilful attempt by the Bidders to camouflage the deviations by giving them in the covering letter or in any other documents that are enclosed may render the Bid itself non-responsive.

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PIF-MLP-001/2018	<b>PSLV INTEGRATION FACILITIES (PIF)</b>	SECTION: F6
	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 1 OF 1

  

**SCHEDULE OF TIME FOR MANUFACTURE, DESPATCH AND SHIPMENT TO SDSC SHAR**

Equipment	Time for manufacture from date of LOI / PO excluding control assembly	Time for packing and ready for despatch from Works	Time for shipment to site	Deviation	Total time from date of LOI / PO to shipment to site.
<b>MLP-1</b>					
<b>MLP-2</b>					
<b>MLP-3</b>					

The Bidder hereby undertakes to meet the above time schedule from the date of LOI / PO

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NAME: \_\_\_\_\_

DESIGNATION: \_\_\_\_\_

DATE \_\_\_\_\_

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PIF-MLP-001/2018	PSLV INTEGRATION FACILITIES (PIF)	SECTION: F7
	MOBILE LAUNCH PEDESTALS (MLPs)	SHEET 1 OF 1

**SCHEDULE OF BIDDERS EXPERIENCE**

The bidder shall furnish here under a list of STRUCTURAL works executed by him to whom a reference may be made by the PURCHASER in case the PURCHASER considers such a reference necessary.

SL. NO.	Name & address of Client / Name & address of project or plant (incl. tel.no., fax no., e-mail and name & designation of person who can be contacted.	Purchase Order / Contact no. and Date.	Brief details of equipment / system covered	Scope of services	Contract price (Rs)	Scheduled date of completion	Actual date of completion	Reasons for delay in completion, if applicable.	REMARKS

SIGNATURE: \_\_\_\_\_  
NAME: \_\_\_\_\_  
DESIGNATION: \_\_\_\_\_  
DATE \_\_\_\_\_

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	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 1 OF 1

  

**DATA TO BE FILLED ALONG WITH THE BID FOR SUPPLY & COMMISSIONING OF MLPs**

SR. NO.	DESCRIPTION	TENDERS OFFER
1.0	Confirm that the system shall be realised as per technical specification, approved manufacturing drawings, bill of material to meet the functional requirement.	Yes / No
2.0	Confirm that raw materials procured as per specification and to be erected tested & commissioned at site as per tender specifications.	Yes / No
3.0	Confirm that all the items are to be inspected by Bidder/TPIA / Departmental representative at Vendors shop before reaching to manufacturer's shop	Yes / No
4.0	Confirm that fabrication of all items shall be done as per IS: 800 & tolerance in fabrication shall be maintained as specified in relevant drawings.	Yes / No
5.0	Confirm that all sub-assemblies shall be control assembled at vendor site for alignment and tolerances inspection to meet the tender specifications	Yes / No
6.0	Confirm that fabricated modules shall be sand blasted and applied with one coat of primer paints before control assembly and dispatch to SDSC SHAR as per tender specifications	Yes / No
7.0	Confirm that all the items shall be painted as per painting scheme.	Yes / No
8.0	Erection sequence shall be submitted along with offer.	Yes / No
9.0	Manufacturing schedule & Erection schedule shall be submitted along with offer.	Yes / No
10.0	Resources planning shall be submitted along with offer	Yes / No
11.0	Man power planning for erection shall be submitted along	Yes / No
12.0	Confirm that survey of all civil interfaces will be carried out with own Equipment's & man power and based on survey reports, all subassemblies like anchoring and de-anchoring interfaces shall be erected & aligned. Also confirm that necessary packing plates will be supplied if required during erection.	Yes / No
13.0	Confirm that all the fasteners and testing tools required for erection of subassemblies will be supplied.	Yes / No
14.0	Confirm that testing and commissioning of the total system shall be carried out as per specification.	Yes / No
15.0	Confirm that QAP for fabricated items, machined items, Subassemblies and for total MLP in assembled condition shall be submitted for approval.	Yes / No
16.0	Confirm that during execution of works, If required addition / deletion of the works will be carried out and such variation is limited to $\pm 10\%$ of the total order quantity. The unit rates quoted shall be valid for the quantity variation of $\pm 10\%$ .	Yes / No

  

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SPEC. NO. TCE.10977A-D-857-001	<b>PSLV INTEGRATION FACILITIES (PIF)</b>	SECTION: F9
	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 1 OF 1

  

**CHECK LIST**

S.NO	DESCRIPTION	RESPONSE BY SUPPLIER
1	All documents related to Prequalification criteria mention in Section F2 have been met and all related documents are enclosed in technical Bid	Yes / No
2	Demand Draft towards the Tender fee and Earnest Money Deposit are enclosed in technical bid and scan copy is uploaded in e-procurement portal.	Yes / No
3	The detailed scope of work and technical specifications are understood and price was quoted accordingly.	Yes / No
4	Confirmation that the quoted prices are firm and fixed till the completion of scope of work.	Yes / No
5	Validity of Offer is 4 months (minimum).	Yes / No
6	Vendor Evaluation Format is attached	Yes / No
7	GST at the prevailing rates for (If not mentioned it will be assumed that the price quoted are inclusive of taxes).	Yes / No
8	Delivery Schedule with milestones	Yes / No
9	Accepted the Department Payment Terms	Yes / No
10	Are General terms and Conditions of Contract for Supply & Erection included in proposal acceptable?	Yes / No
11	If not acceptable, are the deviations brought out in the "Schedule of Deviations"	Yes / No
12	Are there any deviations from enquiry technical specifications?	Yes / No
13	If there are technical deviations, are these filled in "Schedule of Deviations from Tech. Specifications"?	Yes / No
14	Warranty for the fully commissioned and accepted system is 12 months	Yes / No
15	10% of the Order Value shall be submitted as Security Deposit for the performance of the contract along with acceptance of order letter, which is valid till acceptance of the system.	Yes / No
16	10 % of the Order Value shall be submitted as Performance Bank Guarantee, which is valid till completion of the warranty period plus 3 months claim period.	Yes / No
17	Liquidated Damages (Ref. Clause 23 of Section A.) are acceptable	Yes / No
18	Last three years audited financial results are enclosed	Yes / No
19	Registration certificate of the company is enclosed	Yes / No
20	All the forms in Section F1 to F10 are filled	Yes / No
21	Are all data sheets A/B duly filled in and submitted in offer	Yes / No
22	Technical documents / drawings are attached along with technical bid (Ref. Clause 7 of Section A )	Yes / No
23	Section F1 & F10 unpriced copy enclosed along with technical-unpriced bid.	Yes / No
24	Section Priced Bid Format (F1) filled in e-procurement Price Bid form only.	Yes / No
25	Section F10 Filled and enclosed as Price Bid supporting document in e-procurement only	Yes / No

SIGNATURE: \_\_\_\_\_  
NAME: \_\_\_\_\_  
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	<b>MOBILE LAUNCH PEDESTALS (MLPs)</b>	SHEET 1 OF 2

  

**SCHEDULE OF SUB VENDORS**

**1.0 GENERAL**  
1.1) This section provides details of the approved vendors / approved makes for brought out items, which form a part of this enquiry package  
1.2) Bidder shall clearly indicate the makes of all brought-out items and shall at no point of time during the execution deviate from those indicated in the offer document.  
1.3) The contractor shall suggest and provide better make after taking prior approval of the department during execution of contract.

**2. LIST OF APPROVED SUB VENDORS /MAKES**  
**2.1) PAINTS**  
A) M/S BERGER PAINTS  
B) M/S ASIAN PAINTS  
C) M/S GRAND POLYCOATS  
D) M/S SHALIMAR PAINTS  
E) M/S HEMPEL PAINTS  
F) M/S BOMBAY PAINTS  
  
**2.2) THIRD PARTY INSPECTION AGENCY**  
A) M/S LLOYDS INSPECTION AGENCY  
B) M/S M.N.DASTUR & COMPANY (P) LTD  
C) M/S DNV GL  
D) M/S BUREAU VERITAS  
  
**2.3) WELDING SEQUENCE**  
A) M/S WELDING RESEARCH INSTITUTE, TRICHY  
  
**2.4) FASTENERS**  
A) M/S UNBRAKO  
B) M/S TVS  
C) M/S LPS  
D) M/S GKW

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A) M/S SAIL  
B) M/S TATA  
C) M/S JINDAL  
D) M/S ESSAR

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